The Repellent Effect of Waste

Studies of Unusual Factors affecting Willingness To Purchase

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February 2019

A thesis submitted for the degree of Doctor of Philosophy

of The Australian National University

Unless otherwise acknowledged in the text, this thesis represents the original research of the author.

Signed:

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Acknowledgement

The author would like to thankfully acknowledge the following people and organizations for their support and contributions to the completion of this research:

- TelSoft Group companies and all the teams who worked to support the field experiments;

- All industry partners in South East Asia who contributed, supported and helped to carry out market tests and field work in their respective markets;

- The research supervisory panel: Dr. Alex Eapen, Dr. Aaron Bruhn and Prof. Andre Bonfrer, for their excellent guidance, support and advice;

- The College of Business and Economics at the Australian National University, for providing all the resources and support to carry out this research, including the Australian Postgraduate Awards (APA) Scholarship.

Abstract

This research poses a theory of the Repellent Effect of Waste in services and perishable goods, explores its principles, and proposes the first moderating factor in the literature that we are aware of.

The main ideas of our research and the proposed theory focus on the following three areas of contribution to marketing science:

[1] We offer insights about waste aversion in services and actual WTP. We carry out experiments to support our theoretical propositions;

[2] We propose insights about the decision-making processes that people go through in terms of complexity and choice (relating to 'waste' and in the context of offers and price design), and how cost disclosure interacts with this;

[3] We discuss the importance of key variables such as income (or relative wealth), on those processes, and support our propositions with experimental insights.

Through a series of six experiments, this research brings evidence of waste aversion in the context of services, which is the main contribution of the research.

This research also looks at Willingness to Purchase (WTP) and proposes that Qualitative Cost cues could be an effective and ethical way to increase consumer's willingness to pay a price premium.

Our experimental results show that there is an ethical, cheap and effective way to communicate a price premium to consumers and convince them to buy a

premium product: qualitative cost cues. WTP a premium product can be increased by up to 36% in potential consumers.

Our experiments further show that less is not always more. In many industries, marketers offer features that build additional value offered. Sweeteners, bonus packs, 2-in-1 deals and similar marketing techniques have become commonplace. However, our experiments show there could be too much value, bordering on waste, in an offering, which eventually could put customers off, rather than entice them into buying the product.

Keywords: pricing, bundles, pricing of services, service marketing, waste, sustainability, efficiency.

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CHAPTER 1: INTRODUCTION

1. Introduction and motivation

In July 2018, the British fashion label Burberry admitted it had burned unsold clothes, accessories and perfume worth 28.6million British pounds (50.6million AUD). Analysts calculated that over the past five years, the company had destroyed more than 90million British pounds (160million AUD) worth of products, in order to protect the exclusivity of its luxury brand (Cooper, 2018). The owner of Cartier and Montblanc, Richemont, has also admitted it bought back 480million euro (760 million AUD) worth of watches over the last two years, most of them to be thrown away[1]. It seems like scarcity is used as justification for a price premium. Is this what it takes to persuade customers to pay a premium on an offering?

A show of growing popularity on ABC television is "War on Waste", aired at prime time 8:30pm AEST on Tuesdays, which investigates waste in electronics, furniture, household thrash and food. The "strawnomore" movement gained millions of followers in less than 3 weeks. [2] It seems that people are increasingly aware of, and

[1] The Swiss watchmaker admitted it destroyed nearly $744million of its designer watches, after it bought them back from retailers, to avoid the products being sold at knockdown prices. The company was worried that unsold stock would end up being discounted by unauthorised resellers, and "damage the image and pricing power of its brands" (from https://www.news.com.au/finance/business/other-industries/richemont-destroyed-luxury-watches-to-avoid-ruining-brands-prestige-by-lowering-prices/news-story/f9061bcb332e4b65d00c2f4d6af271c3, May 24, 2018.

[2] The straw-no-more movement gained momentum in 2015 after a graphic viral video by marine biologist Christine Figgener at Texas A&M University, who extracted a plastic stuck up the nostril

angry about waste in physical products, and not just environmental campaigners.

However, no one seems to be talking about waste in services. To the best of our knowledge, there is very little research done on waste in perishable offerings, services and intangible products.

It also seems that price premiums are justified by scarcity of the offering of branded goods and services. Often this scarcity is maintained by destroying inventory, in order to protect the price premium.

This research aims to shed a light on other ways that exist to communicate a premium product or service to consumers, and on ways that waste in services can affect consumers.

Our motivation comes from issues of waste appearing in every life, such as Megabytes included in your monthly mobile plan that you never use, theater season passes that you use to go to performances only two times per season, unlimited fitness club subscriptions for the club you visit once a month, health insurance plans that include yearly benefits for alternative medicine which you never claim, or a membership in a movie theatre chain that you never visit.

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of a live sea turtle. The video had more than 30.7 million views on YouTube alone. As a result of the movement, Starbucks declared it will abandon plastic straws by 2020, San Francisco council and Moreton Bay Council in Queensland and many other cities announced they are banning plastic straws, and the UK Prime Minister Theresa May proposed to ban plastic straws, drink stirrers, and plastic cotton buds by the end of 2018.

Services still use resources, and waste in services could ultimately be quantified to demonstrate that waste is just as significant as the monetary value of burned luxury goods. No one has done such quantification so far, to the best of the author's knowledge. Empty seats on airplanes still incur costs. Underutilized resources represent an economic waste from potential unsold services they can be used to render.

Communicating a premium in services can focus on more than just scarcity; disclosing supplier side information can be a non-traditional but effective way to convince customers to pay a premium, without needing to burn quality products.

A significant motivation behind this research came from the author's work in telecommunications, especially in providing and improving broadband access in developing and third-world countries. A classic perishable offering, access to communications is seen as a driver for economic development and lifting people out of poverty. The UN has put access to broadband as one of its 2020 developmental goals. Countries such as Australia are spending 40 billion dollars on building a National Broadband Network.

What if, instead of pouring finances into new investments, we look at the utilization of current investments? What if we analyze deeper the offerings for customers in the classical marketing paradigm of price, product, place and promotion? In particular, what if we focus on price and product design of all service offerings? We look at how

offerings can be optimized to improve customer willingness to purchase, and at the same time eliminate waste and leave spare resources which can be used to serve additional customers.

The current research endeavor looks at improving both the WTP in an ethical and efficient way, and at improving service design in offerings to avoid waste.

2. The Big idea: research questions and contribution

This research poses a theory of the Repellent Effect of Waste in services and perishable goods, explores its principles, and proposes the first moderating factor in the literature that we are aware of. This research proposes that waste in services, once it is perceptible to consumers, leads them to purchase decisions focused on avoiding the waste. The magnitude of that change in consumer purchase behavior to avoid waste is further moderated by relative income.

The main ideas of our research and the proposed theory focus on the following three areas of contribution to marketing science:

[1] We offer insights about how perceived waste in services leads to consumer aversion to purchase, and decreases WTP. We propose people will make a purchase decision based on avoiding the perceived waste. We carry out experiments to support our theoretical propositions;

[2] We propose insights about the decision-making processes that people go through in terms of complexity and choice (relating to 'waste' and in the context of offers and price design), and how cost disclosure interacts with this; We propose the qualitative cost disclosure increases WTP a premium.

[3] We discuss the importance of key variables such as income (or relative wealth), on those processes, and support our propositions with experimental insights.

There is little evidence of waste aversion in the context of services. This is the core contribution of our research. Although aversion to waste has been

documented before in the case of tangible products, our new idea is that services carry more waste aversion than products. This is our proposed theory of 'the repellent effect of waste' in service offerings.

It is of crucial importance that waste aversion is brought into the context of services, and its implications for pricing for services be thoroughly explored, both experimentally and theoretically. This is the major gap that the current research aims to fill in the theory space of marketing and pricing.

If the additional value of a service is not wasteful, but is a different value proposition to the consumer, then how to communicate that value and convince the consumer to buy the service becomes important. Therefore, this research also looks at factors that could increase Willingness to Purchase, and in particular willingness to purchase at a premium. The research proposes that Qualitative Cost cues could be an effective and ethical way to increase consumers' willingness to pay a price premium. The destruction of inventory to create scarcity (in the case of Burberry and Richemont) is an effective way to keep a price premium, but it is not an ethical way. The revelations of wasteful destruction created significant consumer backlash. If an offering has significant value that is not wasteful, how can that be communicated more effectively? We seek to answer the research question: how can the worth of a premium product or service offering be best communicated? What price cues can help convince consumer to pay a premium?

There are many factors explored in literature which affect WTP, but we propose a new factor: the qualitative cost information. The idea that costs could play a role in decreasing price sensitivity may seem controversial. However, we propose that presenting qualitatively the costs incurred by the supplier, together with the premium price for an offering, explains the investments made by the supplier and justifies the higher price to consumers.

A summary overview of the big ideas of this research is given in the table below:

Table 1. Summary of big ideas in the thesis

	Experiment 1	*Experiments 2,3,4*	*Experiments 5 and 6*
Research agenda	How would consumers respond to perceived waste in perishable offering? How much do you include in your offering? How much are consumers willing to pay for a lesser quantity?	How would consumers respond to perceived waste in products and services? How can price cues help consumers make their purchase decision? How can the worth of your product or service value be best communicated? What cues can help to justify a price premium?	How would consumers respond to perceived waste in services? How much are consumers willing to pay for a lesser quantity? How will decisions to purchase be influenced by the relative wealth of individual consumers?
Theoretical lens	Waste aversion	Waste aversion Cue theory	Price-expectancy model of consumer choice Waste aversion
Hypothesis propositions	Proposed 'Repellent Effect of Waste': Proposition 1: There exists a perception of waste in services. Proposition 2: Perceived waste in services repels customers. Proposition 3: Income moderates the strength of the repellent effect of	Proposed qualitative cost cues disclosure increases WTP a price premium: Proposition 4: Cost disclosure affects willingness to pay price premium. Proposition 5: Income moderates the effect of cost disclosure on willingness to pay price premium.	Proposed 'Repellent Effect of Waste': Proposition 1: There exists a perception of waste in services. Proposition 2: Perceived waste in services repels customers. Proposition 3: Income moderates the strength of the repellent effect of perceived waste.

	perceived waste.		
Key findings	'Repellent Effect of Waste': 1. Perception of waste confirmed in perishable offerings.	Proposed qualitative cost cues increase WTP a price premium by up to 36%*[3]. Qualitative costing cues are an effective, ethical and innovative way to increase willingness to pay a premium. The moderating effect of income on the relationship between qualitative cost disclosure and WTP price premium is not confirmed.	'Repellent Effect of Waste': 1. Perception of waste confirmed in services.* 2. Confirmed that perceived waste in services repels customers.* 3. Confirmed moderation effect of income on the strength of the repellent effect of perceived waste. *

[3] A * indicates that the effect observed was statistically significant at confidence level of 0.05.

CHAPTER 2: Theoretical background

Pricing research in marketing tends to sit at the intersection of different fields, and often looks to extend and enrich the field by bringing insights from psychology, sociology and microeconomics. Examples of such amalgamations include the applications of game theory approach to pricing, the newer conjoint methods for measurement of pricing effect, and advanced yield management and selling techniques applied in pricing for auctions and online direct selling platforms (Rao, 2009). Many interesting insights can be brought in from such inter-disciplinary intersections, and in the present research, we focus on bringing psychology and consumer research insights into fundamental pricing questions around price design and product offering / service design.

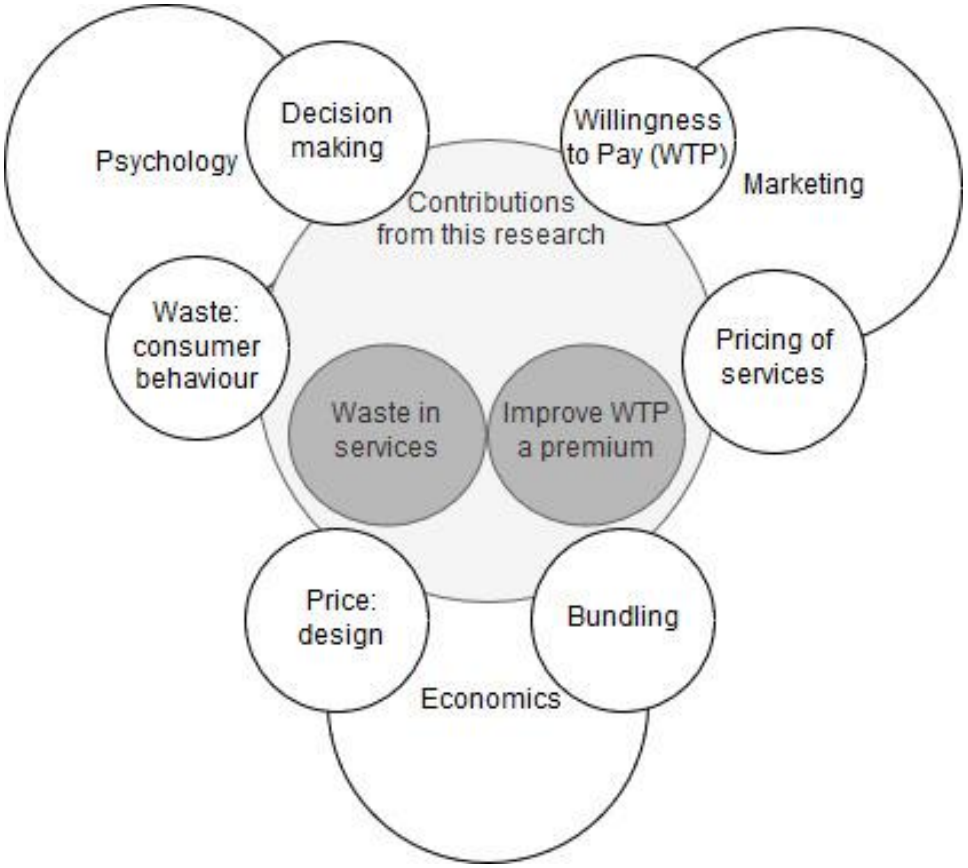
Despite the multi-branched nuances in pricing research, one fundamental topic remains measuring the willingness to pay and implications from such knowledge or measure to designing prices. WTP, or the reservation price for a product or service, and its application into important pricing decisions for the firm is a core topic in our discipline (Jedadi and Jagpal, 2009). Such decisions include what product value to include in offerings, what discounts to give, to whom should they be given, how to design bundles, and how to determine length of product lines. The current research is positioned to contribute to all these fundamental questions in pricing by bringing in a new concept: the repellent effect of waste (REW). We study how that effect works on willingness to pay, in particular in the context of services.

Willingness topurchase is highly correlated to actual behavior (Zeithamlet al.1996; Ajzen and Fishbein1980; Oliver and Bearden1985) and this relationship has been empirically tested inICT product (Yang and Jolly2009) and service businesses(e.g., e-commerce, green product) (Ramayah et al.2002).Hence, a consumer's willingness to purchase a specificproduct is a good predictor of actual purchase of the product.

In this chapter, we explore existing relevant theory in the key areas where our research is positioned to contribute. We consider each of the following in turn:

1. WASTE
2. SERVICES
3. PRICE
4. DESIGNING THE PRICE and PRICE BUNDLING
5. WILLINGNESS TO PAY.

The diagram below illustrates the focus of this research and how it connects to the existing areas of theory in marketing, economics and psychology:



WASTE

Although the repellent effect of waste, or waste aversion which consumers exhibit under certain circumstances has been documented before in psychology in the context of physical goods, the present research extends and enriches that theory into services, and focuses on the effect on WTP. A search for 'waste' in marketing academic journals reveals that the concept has been neglected in the context of pricing. Articles mentioning 'waste' focus either on the environment, or on the production and manufacturing aspects of the firms, with the "War-on-Waste" principles being the most common theory field where waste has been studied. The terms 'Scientific Management' (Taylor, 1919), 'Just-in-time'

manufacturing and 'Kaizen'[4] (Imai, 1997), Total Quality Management (Flynn et al, 1994) and Six Sigma (Linderman et al, 2003), all started from analysing waste in production, and they revolutionized manufacturing theory. The present research aims to bring the repellent effect of waste into service offering, design and pricing of services; in other words, we aim to create a 'Just-what-you-need' principle in pricing of services.[5]

Waste is an unusual concept in services. Some may argue that there is no actual waste of resources in terms of services, as no physical good is being spoilt or unused, which was the motivation for the 'war-on-waste' theories in manufacturing. However, our research poses that waste aversion affects just as strongly the intention to purchase and the willingness to pay for services.

To deeper examine the insights about waste aversion in services that we proposed, it is good to take a step back and look at the different definitions of waste. The classic dictionary definition of 'waste' focuses very much on the environmental and physical aspect of the word, defining 'waste' as:

> "damaged, defective, or superfluous material produced by a manufacturing process: such as (1) material rejected during a textile manufacturing process and used usually for wiping away dirt and oil cotton waste; (2) scrap; (3) an unwanted by-product of a manufacturing process, chemical laboratory, or nuclear reactor toxic waste" (Webster, 2002).

However, the definition of 'waste' has evolved over time to more than physical matter, and expanded beyond pure unwanted by-product. In a recently commissioned study by the Australian Government Department of Sustainability,

[4] Comes from the Japanese words "kai-" which means "change" and "-zen" which means "good." The popular management theory from Toyota translates this as "continuous improvement" or "small incremental improvements" in manufacturing and efficiency.
[5] Analogous to 'just-in-time' principles for manufacturing and supply of physical goods (Imai, 1997)

Environment, Water, Population and Communities, a definition of 'Australian waste' was compiled for each jurisdiction (Allan, 2012). In the Australian Capital Territory (ACT), 'waste' is defined as:

"Any solid, liquid or gas, or any combination of them, that is a surplus product or unwanted by-product of any activity, whether the product or by-product has value or not.
Waste includes:
(a) any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment;
(b) any discarded, rejected, unwanted, surplus or abandoned substance, whether or not intended for sale, recycling, reprocessing, recovery or purification by a separate operation from that which produced it;
(c) any other substance declared by regulation to be waste." (Allan, 2012, p. 5, underline added for emphasis.)

What is interesting to note in the comparison of the two definitions, set ten years apart, is the addition that the discharged or 'extra' substance may still be of value, and that any surplus (whether or not it is defective) could be waste, even though it could have been intended for sale. The other Australian jurisdictions have similar definitions to the ACT.

This subtle change in the definitions of waste over the observed ten years is in line with our proposed theory of the repellent effect of excess, unwanted, extra-value loaded services. This is an important change in the characterization of waste, which allows for elements of objective value to be subjectively perceived as waste, and this provides a major proposition of our research.

It is important to note that 'waste' studied in this research is different from unused capacity or excess capacity. There is marketing research into unused service capacity (Ng et al., 1999) and it focuses on the strategic role of unused service capacity. In excess capacity, and unused capacity, there is no

customer paying for the resource. The capacity from the point of view of a supplier of services is remaining unutilized and there are no customers who have 'reserved' it, paid for it, subscribed for it, or in any other way given their agreement to use it.

In the waste concept examined in this research, we look at real customers committing to buy OR deciding to commit to buy OR actually buying that unused capacity. This is very different from the capacity sitting idle or unutilized. That is the key difference between the waste in services' repellent effect in my theory, and the marketing literature existing.

With global competition, the focus on efficiency in manufacturing has led to influential concepts in management theory such as 'lean' and 'total quality management'. 'Lean' is about minimizing waste in a broader concept than just unused physical goods, with a useful definition given in the following excerpt:

> "Lean means 'manufacturing without waste.' Waste is anything other than minimum amount of equipment, materials, parts, and working time that are absolutely essential to production. The lean approach is focused on systematically reducing waste in the value stream. The waste concept includes all possible defective work/activities, not only defective products. Waste can be classified in eight categories:
> 1. Motion: movement of people that does not add value.
> 2. Waiting: idle time created when material, information, people or equipment is not ready.
> 3. Correction: work that contains defects, errors, rework mistakes or lacks something necessary.
> 4. Over-processing: effort that adds no value from the customer's viewpoint.
> 5. Over-production: producing more than the customer needs right now.
> 6. Transportation: movement of product that does not add value.
> 7. Inventory: more materials, parts or products on hand than the customer needs.
> 8. Knowledge: people doing the work are not confident about the best way to perform tasks.
> Most companies waste 70 percent-90 percent of their available resources. Even the best lean manufacturers probably waste 30 percent… Despite the wide knowledge and available resources, many companies are struggling to stay 'lean'." (Dalota, 2011, p.12)

This is the working definition of 'waste' which we apply and test in our research. From the above list of categories, we focus on over-production and over-processing in services, which creates perceived waste from the point of view of consumers.

Our unique contribution to theory includes studying waste aversion in services, which has not been done before. In addition, we use WTP as the dependent variable and in our main experiments, we deal with real WTP in market experiments of *real* customers making *real* purchases with their money. Being able to observe real circumstances which involve real decisions can convey greater robustness to findings compared to, for example, insights about choices and decisions based on hypothetical scenarios and decisions (Weber et al., 2013).

The current knowledge on waste aversion in marketing comes from integrating consumer psychology in the study of how to design prices (Thomas and Morwitz, 2009). The study of different heuristics on the judgement that consumers make in purchasing a product, on the magnitude of prices or numerical differences of prices, has been explored. There are some intriguing experimental findings, for example a study on how the arrangement of digits in an advertised price affects consumer's willingness to purchase (Thomas and Morwitz, 2009).

In the same stream of research, a study by Lisa Bolton and Joseph Alba offers some relevant theory to waste (Bolton and Alba, 2012). Waste aversion as an idea has been shown to affect spending intentions in psychology lab experiments for physical goods. In the first experiment by Bolton and Alba,

participants were asked to imagine that they are traveling on business. Unexpectedly, they have been given have several days off and decide to go to a local resort offering snowshoeing. Participants are split into groups: one group is told they have rented snowshoes last season, the other group is told they have bought snowshoes at home and used them, and the third group are told they have tried snowshoeing several times and enjoyed it.

Participants are then asked how likely they would be to buy snowshoes for $100, or to rent snowshoes (a separate respondent group for each of the two options). In another experiment, the purpose is to compare the re-purchase of a duplicate tangible product that the respondents already have at home, to the repurchase of an intangible service. Participants are told to imagine they are a parent on vacation with their two children. On the flight returning home, the flight is delayed for several hours and participants are given a choice of how to spend $20 to best entertain their children. The respondents can either: buy a board game, which they already have at home and which the children are enthusiastic to play, or buy movie tickets for a movie at the airport. The results indicate respondents would overwhelmingly avoid buying the snowshoes they already bought at home (first experiment) and would avoid buying the board game that duplicates the one they already have at home. The authors further ask respondents to select adjectives that describe the purchases, and 'wasteful' is one of the adjectives that is most often cited for the duplicate purchases.

On the basis of these laboratory experiments, the authors demonstrate that "consumers exhibit aversion to waste" and that this behavior is "driven by distaste for unused utility", distinctly different from "an aversion to squandering

money" (Bolton and Alba, 2012, p. 369). In particular, with the second experiment of product (board game) versus service (movie), the authors further find that "for a service, re-purchase did not affect waste ratings" (p.374) and that goods providers are more vulnerable to waste aversion by customers. The conclusion the authors reach, based on the second experiment, is that service providers can "charge a price commensurate with an offering's utility because of the inherent nature of a service makes it less likely to contain unused utility" (p.381). We will further enrich and expand the findings of the authors, by theoretical as well as methodological contributions, discussed further below in the contributions section.

Due to the difference between service and good providers in terms of evaluation of waste by consumers, as identified by Bolton and Alba (2012), further research has focused on rent-versus-buy decisions (Tully et al., 2013) or on goods waste avoidance. Philip et al. (2015) examine the effect in peer-to-peer renting, Cruz-Cárdenas and del Val Núñez (2016) study clothing disposition by gifting, and several researchers look into food waste (Lin and Chang, 2017; Graham-Rowe et al., 2014; Stancu et al., 2016). In our research, we propose and test a theory of repellent effect of waste especially for services, and for perishable goods, thus expanding the theoretical knowledge in this domain. This helps to understand how and why the effect of perceived waste affects willingness to purchase and willingness to pay a premium, thus contributing to unravelling fundamental pricing issues of bundle inclusion and value design.

SERVICES

Existing research focuses on the effect of waste on physical goods and as seen, it goes as far as stating that services are not affected by waste. Our major contribution is that there is a repellent effect of waste in services, and therefore we explain here why it is important that waste aversion is brought into the context of services.

A contemporary and very topical example in Australia is the provision of financial advice as a service, which showcases the intangible nature of many services. Indeed, "if clients can touch it, feel it or see it, they know exactly what they're buying and immediately many purchasing concerns disappear. But in professional advisory services, you never have the advantage of allowing the client to 'kick the tyres' the way sellers of products do" (Wijetllake 2012, p.24). Furthermore, the worth of advice as a service can be abstract (Iannicola and Parker 2010), with its assessment of value generally involving a qualitative judgement (Weatherhead 2009). The downside of such services being hard to assess in terms of worth and value, has partly been a driver of the unethical events within that industry that has given rise to the current (2018) Australian Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry. [6]

Marketing definitions of products and services have been based on opposition and circular referencing. With a touch of humour, the Economist published a description of services as "products of economic activity that you can't drop on your foot" (Bishop, 2009). Marketing literature has defined services as the non-products (Grönroos, 1998) and characterized them as being

[6] See https://financialservices.royalcommission.gov.au/Pages/default.aspx for further details.

intangible, heterogeneous, inseparable and perishable – the IHIP characteristics (Lovelock et al., 1998; Lovelock and Gummesson, 2004) – in opposition to products. Perishability seems to be employed as an opposing characteristic to durability. Previous research has described products and services as the two sides of a coin (Achrol and Kotler, 2006) and companies as balancing between servitization and objectification (Lindberg and Nordin, 2008). Researchers have called for "the mutual entanglement" of the operant and operand resources to be realized (Campbell et al., 2013, p. 306), with operant defined as resources that produce effects, while operand resources are acted upon by operant resources (Constantine and Lusch, 1994).

In a compelling proposition in 2004, Stephen Vargo and Robert Lusch ask marketing researchers and practitioners to transcend the goods versus services dichotomy and think about a higher order of concept: the service-dominant logic (S-D) (Vargo and Lusch, 2004). The singular use of "service" in their proposition of a new dominant logic for marketing is to differentiate it from the services described in the preceding paragraph. Vargo and Lusch further enhanced their proposition in 2005 and 2008 with an additional fundamental proposition, and have since sparked a lively discussion in what has come to be known as the S-D logic. The new S-D logic is about the process of value creation and is built on the idea that "exchange is about the process of parties doing things **for** and **with** each other, rather than trading units of output, tangible or intangible" – emphasis in the original (Vargo and Lusch, 2008, p.29). This is contrasted with goods-dominant logic (G-D), in which tangible output is central to economic exchange.

The global economy, post industrialization, is shifting continually towards a bigger composition of services and a shrinking share of manufactured goods /

products (The World Bank statistics, 2014). It seems appropriate to consider a major corresponding shift in the science of marketing as well. The fundamental premises of this shift, which Vargo & Lusch state, describe service as the fundamental unit of exchange. They define "service" as "the application of competences (knowledge and skills) for the benefit of another party" (Vargo and Lusch, 2008, p. 256). In this shift, goods become transmitters of embedded knowledge; customers become co-creators of value; value is determined by value-in-use; knowledge is the fundamental competitive advantage; and all economies are service economies (Vargo and Lusch, 2004). Many researchers now agree that service is at the heart of all marketing.

The 'servitization' of the economy is well illustrated in the 2016 report of the UN Secretary General on international trade and development:

> "This process is also driven by "servicification" of economies, whereby agriculture, manufacturing and other sectors are increasingly reliant on services for production and trade. For instance, even in the simple article of clothing, a jacket, physical components, including labour, fabric, account for a mere 9 per cent of the price. The remaining 91 per cent account for a wide range of services such as retail, logistics, banking and marketing.
>
> This suggests the importance of services, particularly infrastructure services, as an enabler of trade and economic sectors, and an instrument for export diversification" (Low, 2013, p. 9/27)

Recent industry statistics demonstrate that the provision of services is growing in an economic sense, and is starting to dominate the global economy. Services now account for two-thirds of global economic output in developed economies and continues to grow as a share of the economy (United Nations Conference on Trade and Development, 2013; World Bank, 2014). Services account for 44% of world employment and one-fifth of total global trade (United Nations Conference on Trade and Development, 2013).

One illustration of the rapid growth of services is seen in boom of the sharing economy[7], largely driven by websites such as AirBnB and Uber. The sharing economy is fundamentally about creating a service economy out of physical assets, usually unutilized or underutilized assets that would not otherwise produce revenue. The sharing economy is largely service-based. This increasingly dominant role of the service component of the economy has been studied by many researchers, as it is characterized with a focus on the customers and produces an intangible product (Fuchs, 1968; Heskett, 1995). Consumer research has focused a lot of attention recently to this business and consumption practice of sharing, under different terms: "collaborative consumption" (Botsman & Rogers, 2010), "the mesh" (Gansky, 2010), "commercial sharing systems" (Lamberton & Rose, 2012), "co-production" (Humphreys & Grayson, 2008), "co-creation" (Lanier & Schau, 2007; Prahalad & Ramaswamy, 2004), "prosumption" (Ritzer & Jurgenson, 2010), "product-service systems" (Mont, 2002), and "access-based consumption," (Bardhi & Eckhardt, 2012). Notable research into behaviour economics has explored the difference between 'sharing in' and 'sharing out' – the latter being 'sharing without caring' (Belk, 2014 and 2017). A good conceptual article (Frenken and Schor, 2017) defines three types of sharing economy examples that pre-date Internet-based start-ups: the second-hand economy, the on-demand economy, and the product-service economy. They are all characterized by consumer-to-consumer interaction (C2C), temporary access and physical goods. The transformation from physical goods into service-based economy is what has explored further in this research.

[7] The World Economic Forum website defines 'sharing economy' as "[having a] focus on the sharing of underutilised assets, monetised or not, in ways that improve efficiency, sustainability and community." (https://www.weforum.org/agenda/2017/12/when-is-sharing-not-really-sharing/, December 2018)

Several companies demonstrate how a shift from manufacturing tangible output, to providing services based on knowledge and skills, is transforming whole strands of economic activity in an unexpected manner. Uber is fast becoming the most globally recognized taxi company, yet it does not own a single car nor a single taxi meter. Mobile Virtual Network Operators (MVNO's for short) such as Lyca Mobile or PLDT[8] are becoming very successful, yet they do not own a single Base Transceiver Station (BTS), the primary piece of equipment which enables the delivery of mobile communications. To create a print design or an animated video, you no longer even need to own a computer: with the Adobe Creative Cloud, there is no need for processing power or storage on a personal device, only an internet connection is needed. Software as a Service (SaaS), taxis and mobile communications are becoming pure marketing businesses. As such, service is the core focus of companies and the service component in offerings to consumers is the key component of value. As stated in the popular Service-Dominant (S-D) Logic theory, "marketing is positioned at the core of the firm's strategic planning" (Vargo & Lusch, 2004, p. 14).

The Service-Dominant (S-D) Logic is a theoretical framework "for a unified understanding of the purpose and nature of organizations, markets and society" (Vargo and Lusch, 2016). The foundational principle of S-D logic is that organizations, markets, and society are fundamentally concerned with exchange of service. The theory defined originally eight foundation principles, which were later expanded to eleven (Vargo and Lusch, 2006, 2008, 2016). As this research contributes to the understanding of willingness to pay for a service and the

[8] PLDT is an MVNO based on Hong Kong, providing affordable calls and messaging services targeted at overseas Filipinos in Hong Kong. It does not own any towers or mobile base stations, but provides the service riding on another local Hong Kong telecom operator.

unconventional factors that affect it, it is important to discuss further the S-D Logic framework and its links to our contribution. In particular, we study the different paradigms relating to goods and services, so we start the analysis by looking at how the S-D Logic theory juxtaposes the two.

S-D Logic postulates that instead of service marketing "breaking free" from goods marketing, as has been the pursuit of the services marketing sub-discipline for the last several decades, all of marketing needs to break free from the goods and manufacturing-based model—that is, goods-dominant (G-D) logic. S-D logic embraces concepts of the value-in-use and co-creation of value rather than the value-in-exchange and embedded-value concepts of G-D logic. Thus, instead of firms being informed to market to customers, they are instructed to market with customers, as well as other value-creation partners in the firm's value network.

The crystalized S-D logic of marketing is building on a lot of previous fundamental research, such as the outlining of marketer's myopia (Levitt, 1960), the call to break free from product marketing (Shostack, 1977), and the study of resources and how they *become* (Zimmerman, 1951, Italics added by author). Some researchers consider elevating services "to occupy a role as a dominant or instrumental logic" to not really be justified (Achrol and Kotler, 2006, p. 332). Others have also proposed alternative customer-dominant logic of services (Heinonen et al., 2010), or have argued that broadening the concept of service carries a danger of losing treasured service-specific knowledge (Stauss, 2005). However, we have seen a fundamental transformation in economy and business, where it is now possible to have the leading mobile operator in a country not owning a single cable, nor a single transmission tower in their key market.

Because of the growing importance of services in the economy, it is of crucial importance that waste aversion is brought into the context of services, and its implications for pricing for services is thoroughly explored, both experimentally and theoretically. This is the major gap that the current research aims to fill.

PRICE

Pricing decisions interact with all other decisions of the firm, and it is important to acknowledge that it is actually *the price* which determines demand (Monroe, 1979, p.13). Key decisions to be made by any firm when designing prices include the answers to the following questions: is the price level we designed and put on the market for our service adequate for the demand? Is what is included as value in that price adequate for the needs of customers? Is there waste or are there insufficient attributes of value for customers? Are there enough cues in addition to price so that consumers have the knowledge to make a good purchase decision? Are consumers not understanding the value our service can give them, and therefore are reluctant to pay the premium price? What cues about the value of a premium product need to be given to consumers? Our research suggests answers for these fundamental pricing decisions of the firm.

Pricing and product design are an integral part of marketing research, so the initial motivation for this research lead to the quest for answers to questions around pricing across service industries in particular.

When designing the prices and product value, it is also important to get consumers to be willing to pay for your product or service. As such, our research also focuses on unconventional influences on willingness to pay. Our first topic deals with perceptions of waste in services and its influence on how consumers would choose to buy a product / service. Our second main area explores how qualitative cost information can affect the Willingness to Pay (WTP) and affect the decision making process. Our third area of interest is the effect that

important individual differences, namely relative wealth or income, could change the effect of perceived waste on consumer's purchase behaviour.

The six experiments we carry out bring insight for product value design, and of how the use of qualitative cost information as pricing cue plays a role in consumers' WTP. We address various questions: How much are you willing to pay for something you won't use? What should be included in the product / service design, what value should your product / service offer for a given price, to improve WTP? When, or under what conditions, does cost information change your WTP? How could qualitative pricing cues be used to increase WTP a price premium?

The above questions are of paramount importance across a number of industries, all of which have various strategic marketing decision points, including: creating optimal value design, ways to improve willingness to pay a premium, and pricing for a particular value composition in a product or service. Through a series of six experiments, we address the research questions: How much do you include in your offering? Is it too much or too little? How much of your product is wasted? Is there any perceived waste which could be used for other consumers' offerings or could improve the company's profit? How would consumers respond to such perceived waste? On the other hand, if a marketer or a company can estimate the amount of value presented in a product or service they offer, and they demand a premium price, how can they convince the customer that the value does not represent surplus waste, but is instead the product premium? How can price cues help consumers make their purchase decision? How can the worth of your product or service value be best communicated? How will decisions to purchase be influences by the relative

wealth of individual consumers? In the present research, we will present our quest to answer all these questions through six experiments.

The table below gives a summary of the research questions and the experiments done in this research.

Table 2. Summary of research questions and experiments carried out in the thesis research

	Experiment 1	*Experiments 2,3,4*	*Experiments 5 and 6*
Research question (s)	How would consumers respond to perceived waste in perishable offering? How much do you include in your offering? How much are consumers willing to pay for a lesser quantity?	How would consumers respond to perceived waste in products and services? How can price cues help consumers make their purchase decision? How can the worth of your product or service value be best communicated? What cues can help to justify a price premium?	How would consumers respond to perceived waste in services? How much are consumers willing to pay for a lesser quantity? How will decisions to purchase be influenced by the relative wealth of individual consumers?
Dependent variable	Actual Purchase	Willingness to Purchase	Actual purchase
Unit of analysis	Individual	Individual	Household
Theoretical lens	Waste aversion	Waste aversion Cue theory	Price-expectancy model of consumer choice Waste aversion
Research design & empirical setting	Field experiment, face-to-face	Online survey	Field experiment Outbound calls
Key findings	Proposed 'Repellent Effect of Waste'	Proposed 'Repellent Effect of Waste' Qualitative costing cues are an effective,	Proposed 'Repellent Effect of Waste'

	Experiment 1	*Experiments 2,3,4*	*Experiments 5 and 6*
		ethical and innovative way to increase willingness to pay a premium by up to 36%.	

We also offer theoretical insights on issues concerning price versus value in terms of overall product design, and value engineering. Microeconomics focuses on pricing as a theoretical issue (Waldman, 2007), while marketing research approaches pricing as a managerial decision (a comprehensive collection is found in Rao, 2009). The latter approach is the leading one in this research, and as typical in marketing and management research, our analysis incorporates theories from economics, behavioural decision, psychology and sociology. The context in which the current research is placed in the science of marketing includes the theory of product line pricing (Chen, 2009) and the field sitting on the overlap between psychology and marketing: behavioral studies on consumer responses to prices (Kahneman et al., 1986; Tversky et al., 1990; Tversky 1967; Tversky and Griffin, 1991; Simonson and Tversky, 1992; Simonson and Drolet, 2004) as well as customer heterogeneity and preferences. Researchers have focused on developing pricing methodologies and strategic and tactical pricing ways in order to maximize the value the company can capture (Nagle, 1987, Zhang & Ansari, 2014). How to design the different prices for a product or service, how much to include as value, and how that value – or the excess of it - affects customers' purchase decisions, is where the first part of our research is mainly focused.

In designing service inclusions in particular, it is interesting to note that research has found that consumers prefer flat tariffs over pay-per-use pricing (Lambrecht, Seim, & Skiera, 2007), and that consumers often buy more than they intend to use (Nunes, 1999 2000). These studies show that consumers often prefer to pay flat fees, even though they might pay more than if they had chosen a measured service plan. In our research, we highlight the opposite

phenomenon: waste included in the service, in terms of usage which cannot be fully utilized, can drive customers away. Consumers would in fact readily pay the same price without the extra value included in the service, which brings profitability implications as well as efficiency implications for firms providing the services.

On the surface, it looks like we have contradicted the findings of Lambrecht et al. (2007) and Nunes (1999 and 2000). However, we pose that there is an underlying mechanism that explains both findings on consumer behavior. It is based on a fundamental characteristic of telecommunications service: consumers buy the service at a different time than they consume it; thus, making service waste not apparently visible at the moment of purchase. Mobile services are paid in advance for the next month, and if at the end of the month usage has not exceeded the chosen subscription plan, the consumer may not be aware of exactly how much he/she has used. The total bill is often sent as a package fee, and only the over-usage is reported as a charge on top. Under-usage is not quantified and not reported. Based on the author's industry experience, it is not uncommon for the customer billing system to *not* have a functionality to track **under-usage** at all. As long as the usage is not ABOVE what the customer chose as a package, the telecom provider may never track or record it. It is also unreported to consumers, so consumers are not aware of under-usage, only over-usage is reported as it is billed and shown in the bills.[9] This is important because under-usage, or waste, is never tracked, never reported, and the

[9] In 2013, telecommunication providers in Australia started showing under-usage to subscribers via additional apps to view and track usage. The current research started before this reporting was in place. In many countries, including in Asia where experimental work was done for this research, such functionality is not available as of December 2019.

consumer is unaware of it. This holds the key in what Nunes and Skiera observed, which initially seems in contradiction to our theory. There was no salience of waste in services, at the time of purchase or at the time the consumer is evaluating the purchase decision.

If and when the consumer becomes aware of waste in their service, behavior changes. If and when waste becomes visible, consumers quickly change their behavior and react by choosing to stop the service, or churn (the industry term for stopping the service or transferring to another provider). Experimental field research has found that consumers will churn once they find out about waste in their mobile subscription, including by Lambrecht et al. (2007) and Nunes (1999, 2000). Furthermore, Lemmens and Croux (2006) and Ascarza and Hardie (2013) found that customers who have a downward sloping trend for usage are more likely to churn. Surprisingly, Ascarza, Iyengar and Schleicher (2016) found that if a telecom provider proactively encourages customers who have used less than their allowed package to switch to cost-minimizing plans, this can counter-intuitively increase consumer churn rates. The authors propose two explanations for this behavior: 1) the campaign lowers the customer's inertia, which in turn 2) increases "the salience of past-usage patterns among potential churners" (Ascarza et al., 2016, p. 46). As such, bringing such information to the attention of those with usage well below what is included in a service package, can reveal this as waste. Therefore, once known, waste may have a repellent effect on consumer willingness to continue to purchase the service, an insight which we explore later through our field experiments. Salient

waste in service changes consumer purchase behavior in a way that consumers would avoid the waste.

DESIGNING THE PRICE and PRICE BUNDLING

Designing the bundle inclusions and the prices of a service are fundamental for any company's sustainability and growth. Out of the four elements of the marketing mix, as originally proposed by Professor Jerome McCarthy (McCarthy, 1960), namely Product, Place, Price and Promotion, three elements deal with creating that value, and only one element – Price – deals with capturing the value back to the company. Given the uniqueness and importance of price as a factor, it is surprising that Pricing is rarely taught as a subject or a course on its own across academic institutions, and at best takes up one lecture in a course on Strategy or Marketing. In this research, we look at the problem of how to design the price and inclusion of services in pricing bundles, sometimes referred to as menu pricing (Ascarza et al., 2016).

The challenges for a marketer to design price and bundle inclusion stem from the fact that any pricing approach needs to balance what are often conflicting goals:

1. Fairness and equality issues
2. Efficiency and reliability
3. Manageability and implementability (Sen, Joe-Wong, Ha, & Chiang, 2013).

In the context of IT services and telecommunications services, fairness and equality issues often require equal, one-level pricing. This is also the case when government regulations are in place for pricing. Efficiency and reliability, being requirements for quality, demand additional investments from the company,

raising the costs and thus requiring higher prices to be charged. All pricing schemes need to be manageable and implementable and be communicated effectively to convince customers to purchase the product or service.

Furthermore, pricing dilemmas become even more complicated in industries with perishable products, such as flights, accommodation services or broadband services. If not sold, an empty seat on flight will never produce revenue on that flight. If not sold on a particular night, a hotel room's ability to generate revenue is lost forever. If no one is using the phone network in a particular minute, that minute is gone forever and cannot be stored nor turned into inventory. All types of services also propose an interesting pricing design problem that has been explored in the literature, where costs are largely fixed regardless of sale volumes, and the output is perishable. The unused capacity problem in services is well explored in operations research (a good overview can be found in Ng, Wirtz and Lee, 1997), and literature proposes seven different ways to address capacity underutilization from operations perspective. It is also interesting to examine this in a marketing perspective, where price is a key variable to play with to improve moments of unutilized capacity. To effectively price in a way to improve market reach, utilization and at the same time maintain profitability, some researchers conclude that a two-part pricing is needed: a high fixed portion and a low variable portion, in order to make sure that fixed costs are covered (Danaher, 2002). The high fixed portion, which comes in the shape of a high sign-up, up-front cost, often leaves out people on low incomes, who have low consumption, and who want the lowest prices. Traditionally, to get to the lowest price per minute of phone call, consumers have

to pay for the highest package, which has a high fixed subscription component. A report by Consumer Futures in the UK describes the "poverty premium" as the fact that less active users pay a premium because they pay more for a unit of use. The report also suggests that at times where capacity is available, users are still charged the same prices as in times when capacity is scarce (Hirsch, 2013, p. 52). This is a waste of resources from the point of view of the firm and represents unsatisfied demand from the point of view of consumers. Our research aims to focus on waste and perceptions of waste and propose a theory how this affects consumer purchase decisions. We use experimental work in South East Asia to give evidence to insights in this area.

In choosing the best pricing strategy for a firm, economics researchers have long highlighted the advantages of dynamic and differentiated pricing models over static and uniform prices (Varian, 1996). Marketing theory has also suggested differential pricing is a solution for perishable products (Monroe, 1979). Many industries with similarities in terms of perishable inventories and large fixed costs, such as airlines, hotels, car rentals, electricity and transport networks, have developed elaborate price discrimination practices. Examples include differentiation of pricing based on time of the day (restaurants), alternative pricing schemes based on seasonality or class of seats (airlines), and pricing schemes based on metro tickets bands of classes. Researchers have further proposed, and tested pricing based on differing quality of service during the day, differentiated by day of the week and purchase method, game-theory pricing and token bargaining, particularly for the IT and communications services (Sen, Joe-Wong, Ha, & Chiang, 2013). Game-theory price calculation and

optimization models have been developed in marketing for the auto industry as well (Sudhir, 2001; Sudhir et al., 2005). Geographically segmented pricing (Xavier, 2011) has also been studied. Yield management research in accounting (Smith, 1992), research into nonlinear pricing and multi-part pricing (Iyengar and Gupta, 2009) and revenue management in marketing (Kimes, 2009) are further areas of academic research exploring the strategic implementation of differential pricing. Targeted pricing in terms of one-on-one and customized pricing offers has also been researched in marketing (Zhang, 2009). There has also been an explosion in the study of 'name-your-own-price', or "pay-what-you-want" approaches (Spann and Tellis, 2006; Kim et al., 2009; Greiff et al., 2014), and analysis of past buying behavior of customers in the Big Data environment of marketing analytics to come up with prices (Lal and Rao, 1997; Tirunillai and Tellis, 2014). In this research, we will further explore price differentiation and price design in services, with a focus on value included in pricing.

In designing the prices for a product or service, the factors which are taken into account can be endogenous or exogenous in nature. The endogenous factors are internal to the company and they consist of the company goals in terms of performance, including but not limited to market share, revenue targets, profitability targets, nature of costs, and growth measures. Other endogenous factors could come from new products or new internal processes and innovations, which require re-designing of the pricing strategy. Endogenous factors are all located at the Supply side of the economic exchange. When considering supply side factors of pricing strategy, researchers answer the question: what should the company do and why?

The exogenous factors come from the environment outside the company and include competition, general economic cycles, psychology of choice, regulation, and shifts in consumer preferences, tastes and behaviors. Exogenous factors are all located at the Demand side of the economic exchange. When considering demand side factors of pricing strategy, researchers answer the question: what will consumers or competitors do and why?

A key contribution of the current research is a proposed pricing framework which considers at the same time demand (exogenous) and supply (endogenous) factors.

Finally, the theory on how consumers use bundles is also enriched by insights into decoupling the bundle after the purchase (Soman and Gourville, 2001). It was found that customers who bought a bundled four-day ski pass were less likely to ski on the last day of their pass, compared to customers who bought four one-day passes. The authors suggest that the decreased attention to sunk costs in the first instance could be "motivationally driven, i.e. there is an underlying desire to avoid consumption" (Soman and Gourville, 2001, p.30), or it could be cognitively driven. The 'wasted' value of the pass past-purchase in this case gives an interesting link to our later results where we observe a repellent effect of waste prior to a purchase decision being made (pre-purchase waste). Based on the anticipation of the decreased consumption after bundling, Soman and Gourville go as far as to recommend that firms actually actively use price bundling to "discourage or encourage service consumption, or passively anticipate actual service demand to manage scarce resources better" (p.42). While our research demonstrates that perceived waste in pre-purchase will negatively affect the buying decision of a customer, Soman and Gourville's

findings suggest that where consumers do purchase a bundle, there could be part of the offering which is unused – wasted – after the purchase. Thus, both pre- and post-purchase research highlights the importance of careful product design, which should be aligned with the firm's objectives, goals and resources. Careful bundle and price inclusion design could be used to increase, or decrease the market share and customer base, and as a tool to increase or decrease the use of resources by current customers.

WILLINGNESS TO PURCHASE

There is a vast literature in marketing and economics on the measurement of WTP and its use for demand estimation, pricing decisions and policy evaluation (an excellent and extensive summary can be found in Lusk and Hudson, 2004. Jedadi and Jagpal (2009) further conclude there is a renewed interest in WTP, stemming from the following factors:

• Pricing and transaction data availability has increased, and marketers and researchers have improved access to analyse such data.

• E-commerce has made mass customization possible. This justifies the need for a more accurate understanding of WTP.

• Methodological advances in Baysian statistics, finite mixture models and experimental economics allow researchers to obtain more accurate estimates of WTP at segment, or even individual level.

All three principles are applied in the present thesis research, by the availability of large-scale pricing and transaction data, and the understanding of

price design and mass customization applied in the design of price points of services at household level.

The justification of the importance of research into WTP is further corroborated by research findings that WTP is highly correlated to actual behavior (Zeithamlet al.1996; Ajzen and Fishbein1980; Oliver and Bearden1985). This relationship has also been empirically tested with ICT products (Yang and Jolly2009) and for service businesses (e.g., e-commerce and green products) (Ramayah et al.2002). The implications for service business of the Repellent Theory of Waste are a key contribution of the thesis research.

While economic theory of price differentiation (Varian, 1989) analyses one supply-side aspect of price-setting dilemmas, how consumers respond to those prices is equally important for the effective resolution of those dilemmas. The psychology of price response and purchase choice (Thaler 1985; Kahnemann and Thaler, 1986, Simonson and Tversky, 1992;) is another area of research in marketing which we contribute to. Once the price and services included in your offering have been designed, would consumers buy it? What kind of communication in terms of product and value cues can you present to affect the decision to buy? What cues can help to justify a price premium?

In understanding how consumers make choices, theoretical work by Itamar Simonson has examined the phenomenon of consumers choosing less over more. In a series of hypothetical lab experiments, Simonson (1993) revealed that consumers would choose a product with less features over another choice with

more features. The experiments are set within a choice of alternatives offered at the same time to consumers and explore the effect on willingness to purchase different brands of the same product (e.g. choose a cake mix between two brands: Pillbury and Lady Lee). Based on these experiments, Simonson proposes that "consumers are less likely to choose alternatives that are offered with product features or premiums that have little or no value, even when these features and premiums (e.g. opportunity to purchase a Collector's Plate) are optional and do not reduce the actual value of the product in any way" (Simonson, 1993, p. 79). This relates to our theory of the repellent effect of waste, to the extent that people are observed to avoid both extra features and extra benefits, although the underlying mechanisms are very different. This is important confirmation for the observation that perception of value, rather than a measure of objective value, is the more important consideration when buying and that consumers can and often do choose less over more.

Differences exist between Simonson's theoretical work and our proposed Repellent theory of waste. This occurs over at least three dimensions, namely:

1. the underlying mechanism driving the avoidance of unused utility in the purchase decision;

2. the products versus services differentiation;

3. the proposed moderating effect of relative income.

Simonson (1993) demonstrates how purchase decisions are based not only on absolute attribute values, but also on the characteristics of alternatives in a set of brand choices presented to consumers. The options which consumers have

to evaluate for purchase concern the relative position of a brand, with or without the extra features, within a particular choice set under consideration. There are usually two or more alternative brands present at the same time, and prices are always different. Willingness to pay is presented and evaluated in a set of alternatives, with different quality, different brands, and more features which are available for a higher price. Experiments are always done with physical products, and the features customers do not need/want are physical bonuses (such as collector plates, or extra car detailing) which are added to physical products (cake mix, cars). The bonuses offered are optional, and they are additional in terms of price to the original offering the customer is considering.

In contrast, we conduct experiments which have offerings presented one by one, not as a set of alternatives. This means the underlying mechanism of decision making is different: in choosing between a set of alternatives, "frame of reference" effects (Kotler et. al, 2013, pp.200-201) are the key drivers for a purchase decision; if that frame changes, the outcome might be different. In the case of offerings presented one by one, as in our experiment 4, and with all offerings from the same telecom provider (same 'brand'), the decision making is focused on the value of that single offering and the perception of that value. Any avoidance of extra features is only on the evaluation of the single offering, not based on a comparison between different providers and different packages in a survey.

Furthermore, in our experiments the prices and brand are constant across the offerings. The bonuses, or unwanted features, were part of the total bundle offered, one offering at a time. This represents an original and counter-intuitive

experiment, which we have not come across in other research. Offering the product, a second time with the same price but with features removed, to the same target group, and observing an increase in those deciding to purchase, uncovers different mechanisms of decision making. There is no framing effect or alternatives presented together, so the underlying mechanism for that purchase decision is entirely different. That is why the repellent effect of waste theory is distinctly different from the purchase intention described by Simonson's (1993) in sets of choice alternatives.

Another research distinction we offer is a focus on services rather than products, where services have traditionally considered to be a perishable offering, and not one that goes to waste. In fact, consumer theory so far predicts that service providers are free to include as much unused utility as they wish, due to the nature of services where there is nothing going 'rotten' or sitting unused and taking up space (Bolton and Alba, 2012). Previous research, however, does not focus on demonstrating perception of waste in services by consumers. In fact, Bolton and Alba (2012) claim there is no side effect of loading extra features in services, even duplicating usage or value that consumers already have. Hence, exploring the perception of waste as a factor of repellence is a major original contribution of our research. The delightfully original idea of 'repellent effect of waste' has resonated with both academic and practitioner collaborators.[10]

[10] The proposed theory of the repellent effect of waste was presented at INFORMS Marketing Science conference 2015, ANZMAC Forum 2016, Doctoral Colloquium in University of Canterbury, Christchurch and Doctoral Colloquium in University of Melbourne 2016. It was awarded the DC Highly Commended Paper in 2016. The partnering industry organization (telecom in Indonesia) included the 'repellent effect of waste' in their annual sales and marketing training in 2015.

The idea of income as a moderating factor that changes the magnitude of that repellent effect is the third important and original contribution of our research. Previous research by Simonson (1993) did not suggest any factors changing the magnitude of consumers' unwillingness to buy bonuses, or unwanted features, which they will not use.

Evaluating willingness to purchase as a measure of the consumers' response to pricing is a significant area of research in marketing, and a number of methods for measuring WTP have been developed (a good overview can be found in Breidert et al., 2006). There are a lot of factors which are already known to affect WTP. We examine the existing knowledge on factors affecting WTP, in order to clarify our fourth contribution.

The table below provides a brief summary of the WTP factors research in marketing:

Table 3. Factors affecting WTP in previous marketing research

Factor affecting WTP	Relevant research
Perceptions of value	Monroe, 1979; Nagle, 1987
Product knowledge	Cordell, 1997; Trijp et al., 1996; Lichtenstein et al., 1988
Product involvement	Lichtenstein et al., 1988
Brand	Farquhar, 1989; Srivastava and Shocker, 1991; Park and Srinivasan, 1994
Product risk level	Peterson and Wilson, 1985

Price itself	Etgar and Malhotra, 1981 Jacoby and Olson 1977; Monroe 1973
Ethical considerations (fairtrade, organic, health and wellbeing, ecology)	Mai, 2014; De Pelsmacker, P., Driesen, L., & Rayp, G., 2005; Didier, T., & Lucie, S., 2008; Krystallis, A., & Chryssohoidis, G., 2005
Corporate social responsibility of the firm	Mohr, L. A., Webb, D. J., & Harris, K. E., 2001; Bhattacharya, C. B., & Sen, S. , 2004; Mohr, L. A., & Webb, D. J., 2005
Country of origin	Koschate-Fischer, Diamantopoulos, & Oldenkotte, (2012)
Income	Flores & Carson, 1997; Krystallis, A., & Chryssohoidis, G., 2005; Jacobsen & Hanley, 2009
Mental accounting	Thaler, 1985; Kahneman & Tversky, 2013; Soman, 2004
Exchanged value	Woodruff, Cadotte and Jenkins, 1983; Koschate-Fischer et al., 2012; Bayraktar, 2015, p. 567
Input to output ratio (equity theory)	Huppertz, Arenson and Evans, 1978; Koschate-Fischer et al., 2012
Advertising costs	Nelson, 1974; Kirmani and Wright, 1989
Reference groups, price discount	Bearden and Etzel, 1982; Bourne, 1957

framing	
Cue evaluation theory	Darwar and Parker, 1994; Richardson, Dick and Jain, 1994; Wall, Liefeld and Heslop, 1991
Luxury perception	Kapferer and Laurent, 2016

The above factors have been shown to be heterogenous among consumers even when the same attributes and same prices are shown. It also has been found that these factors affecting WTP are different for the different categories of products, hedonic versus utilitarian products. Below we will briefly discuss each of the findings with regards to factors affecting WTP and show how our research will make an original contribution. It is also important to note that in this study we will focus on the WTP a price premium, defined as "the amount a customer is willing to pay for his/her preferred brand ***over*** comparable/lesser brands of the same package size/quantity" (Netemeyer et al., 2011, p. 211).

Perceptions of value by customers are studied by many authors (Monroe, 1979; Nagle, 1987) as the key to how consumers respond to prices. Estimating that value, these authors suggest, and carefully designing that value, can be used to forecast how consumers respond to price changes and for modeling demand functions for that product or service. 'Designing the value' of offerings is the key job characteristic of marketers and is especially important for industries where no offering exists by itself. For example, in telecommunications, or in airlines, or in banking, the 'offering' is what the marketers design it to be: the number of minutes and megabytes is subject to someone's professional judgement, the

interest packages or loan packages are subject to someone's professional judgement. It is easy to change the offering dynamically, and it does not affect the input resources that go into servicing the customer, such as towers and wires in telecommunications, and bank branches and people in banking services. This is different to manufacturing shoes or toys, where there is less freedom in changing the end product without changing the input resources. Thus, value design is more important in the services and perishables industries. The path to avoid waste perception in services is easier than in products, thus enabling marketers to avoid the repellent effect of waste by better designing the offerings of services.

Product knowledge is a key predictor for consumer's willingness to pay (Cordell, 1997). In addition, consumer involvement with the product has been demonstrated to affect the WTP, and in particular to moderate and intensify the first relationship established about the link between product knowledge and WTP (Trijp et al., 1996). Product involvement implies that the consumer has a strong concern with the product and its potential benefits, and it has been shown the product involvement can intensify the willingness to pay extra for increased product value (Lichtenstein et al., 1988). Product involvement is defined as "the level of a consumer's interest in purchasing a certain product type and how committed they are to purchasing a given brand" (Business dictionary, 2018). Consumers tend to exhibit greater product involvement for goods that have a higher cost and are bought after considerable research and thought, such as cars and property.

Furthermore, many studies have explored the effect which brand has on the willingness to purchase a product. Prolific research has confirmed that brand

equity (Farquhar, 1989; Srivastava and Shocker, 1991; Park and Srinivasan, 1994) was positively correlated with purchase intentions of customers. Various measures for estimating the effect of brand on WTP have been developed. Product characteristics have also been found to be of greater importance than price (Etgar and Malhotra, 1981).

Product risk level has also been studied as a factor affecting the evaluation of a price and willingness to buy a product. Product risk is the potential risk found in all consumer-oriented products, that a product will not meet the quality standards expected by the consumer at the point of purchase. Peterson and Wilson (1985) found that product risk moderates the effect of brand on product evaluation. Their study contrasted price and product performance using a survey of university students and found that buyers balance the risk that a product will not be worth its price with the risk that the product's performance will not meet quality expected. The authors propose that consumers have a 'price-quality schema', and this is a major factor moderating the relationship between perceived price to quality. The risk that a product will not perform up to the expected quality is associated with price consciousness. Thus, product risk is another aspect which has already been studied in the relationship between product and WTP.

It should also be noted that exactly the same price, and the same price cues, communicated to different consumers, might lead to a different WTP. One consumer may judge a price to be acceptable, which another consumer might judge it to be too high (Jacoby and Olson 1977; Monroe 1973). Several moderating factors to explain these effects have been explored in the literature,

though the detail of individual differences is largely the subject of studies in psychology and are out of scope of our research. Rather, we focus on marketing cues and how a new type of extrinsic product cues – namely, qualitative cost information – presented together with a price, can lead to higher willingness to pay a price premium.

A factor of growing importance and growing prominence in marketing communications is the ethical and ecological side of products. Labeling containing "non-genetically modified food", "fairtrade coffee", "socially responsible production", "organic" and "recyclable packaging" are all used as cues for some additional value of the products being offered to consumers. It is important to briefly review this literature, as it looks at qualitative pricing cues presented in the communication to the consumer, alongside the price, and can be considered part of our proposed pricing cues which affect WTP. Interesting research has been carried out into how sustainable and 'green' buildings can successfully elicit a higher price for square meter of real estate in the Japanese market (Fuerst and Shimizu, 2016) However, such ethical and ecological side cues for products focus more on the health and wellbeing side, and often signify higher costs (fair-trade coffee costs more than non-fair-trade label coffee for coffee manufacturers) (De Pelsmacker et al., 2005). For consumers, such labels are a signal that the product has some other benefit (such as the taste or health benefits), and thus affect the WTP through a value component other than the purely ethical consideration (Didier and Lucie, 2008). We also note that one of the studies of how ethical attributes affect willingness to pay found that income has no significant effect on WTP (Mai, 2014). Labels containing the phrases

'recycled packaging, 'organic' and 'fairtrade' were studied and it was found that consumers' income did not play a role in which products' label they choose to purchase. As the categorical income variable is a variable proposed to be a mediator in two of our hypothesized propositions, we aim to enrich this particular research insight.

Closely related to the ethical factors affecting willingness to pay is also the evaluation of the corporate social responsibility of the firm. Researchers have confirmed that corporate social responsibility of the firm has a positive impact on evaluation of the company and the consumer purchase intent of its offering. Furthermore, corporate social responsibility was shown to affect purchase intent more strongly than price (Mohr, et al., 2001; Bhattacharya and Sen, 2004; Mohr and Webb, 2005). Other factors studied in research as affecting WTP include: country of origin (Koschate-Fischer, Diamantopoulos & Oldenkotte, 2012), income (Flores and Carson, 1997; Krystallis and Chryssohoidis, 2005; Jacobsen and Hanley, 2009), and mental accounting (Thaler, 1985; Kahneman and Tversky, 2013; Soman, 2004). These will be examined further below in the context of cue evaluation theory.

Lastly, interesting research on perceptions of luxury has identified that consumers' perception of luxury is highly structured in terms of price. The minimum prices quoted by a single consumer for different luxury products are well correlated, indicating a consistent vision. Consumers also share a common hierarchy of luxury products, in terms of perceived prices, which remains similar across the seven countries the authors investigated (Kapferer, J., & Laurent, G. 2016).

In addition to the factors affecting WTP, we need to examine the underlying theories which attempt to explain how consumers decide to purchase products. In paying a certain price, the equity theory suggests that individuals consider an input : output ratio in the context of the exchange (Huppertz, Arenson and Evans, 1978). While the input describes the contribution that individuals make within the exchange to earn rewards, the outcome refers to expected positive and negative consequences of the exchange. In an exchange relationship, distributive justice is achieved when the benefits of each partner are proportional to their investments (Koschate-Fischer et. al., 2012).

In an exchange situation between a buyer and a seller, the buyer evaluates the benefit received from a brand in relation to its cost such as price and shopping effort (Woodruff, Cadotte and Jenkins, 1983). When evaluating the benefit received, researchers have found that consumers' WTP is affected by an overall evaluation of the firm which makes the offering, including the amount that the firm donates to charity, the fit of the donations cause to the company, and the donation-related and cause-related predispositions of the consumer (Koschate-Fischer et al., 2012). There is an adjustment process that buyers go through in order to achieve an equitable exchange by their own standard and predisposition. Buyers are also found to expect to provide higher input when they expect higher value from the product or service (Bayraktar, 2015).

Cue evaluation theory (Darwar and Parker, 1994; Richardson, Dick and Jain, 1994; Wall, Liefeld and Heslop, 1991) is used to explain the underlying mechanism of consumer purchase decision making. It suggests that consumers'

base their judgments on both intrinsic and extrinsic product cues (Bayraktar, 2015), with reliance on such cues even more for consumers "if they lack sufficient knowledge of prices and if they cannot evaluate whether prices offer good value" (Anderson and Simester, in Rao, 2009, p.3). Intrinsic cues relate to the way the product or service looks or feels. Extrinsic cues relate to non-core attributes of the product and are external to the product's direct use or application (O'Cass and Lim, 2001). Overall cues are what the consumers gather as knowledge, and on the basis of that knowledge, a decision is made to purchase the product or not.

In our research, we apply the cue evaluation theory as the underlying mechanism through which WTP is increased, by showing a cue related to the qualitative costs of the firm. The mechanism works through increasing the consumers' expected benefit from the product when qualitative cues on the cost of producing the product or cost of offering the services are shown. We predict consumers' WTP a price premium will increase, compared to if they do not have that information presented with the price. This is one of our key hypotheses (refer to chapter II, *The Big idea: research questions and contribution*).

In some cases, biases around 'social desirability' are also likely to affect the consumer's decision to purchase a product. This is found in studies about organic food, ethically produced products, or sustainable corporate practices advertised by manufacturing firms (Burke, 2014). We are therefore careful to use qualitative information which is diverse and not necessarily related to ethics, in order to avoid the social desirability bias affecting consumers' decision to purchase.

A major issue we have to address is that price itself can be a perceived as a sign of quality. In neoclassical economic theory of consumer behavior, price is treated as an exogenous variable (Varian, 1996). The price is only considered to be a budget constraint and is used in modeling to construct indifference curves. The price itself is not considered to bring additional cues and information about the product to the consumer. However, price can be perceived as evidence of quality by itself, as demonstrated by a number of empirical studies (first noted by Scitovsky, 1945). Implications of this effect have been discussed (Rao and Gautschi, 1982), with wine being an interesting product category where the effect of price has been well documented (Veale and Quester, 2009). Veale and Quester (2009) found that taste was less important than price and country of origin in determining consumer's quality ratings for wine. This effect of price on perception of value and quality has also been observed in consumer durables (Brucks et al., 2000).

This is an important effect to consider, because in our experimental setup, we look to isolate the effect of qualitative information as a pricing cue on WTP. We have designed our experiment 4 (described further below) with two groups – a control and a treatment group – and we base our analysis on the difference of the change in willingness to purchase between the two groups. Both groups are asked to choose between the same product with two different prices: one higher, and one lower. The first group does not receive any additional information and chooses between two products based on only the price – one product is higher prices, the other is lower, for the same good or service. In the second group, consumers have to make the same choice, but in addition to price, the qualitative

pricing cues are also present. Thus, if price by itself could be a signal for quality, then our first control group could be affected in their WTP by the fact that just the price of the second product is higher. So, we have to consider this in the evaluation of our results. However, the second group is also seeing the prices, one higher one lower, and can make the same inferences as the control group, so we have the same inert effect on consumer choice in both groups.

Early studies have also modeled WTP as a function of income and price (Lancaster, 1966; Radam, 2010) and they use these estimations in calculating the exact monetary value of willingness to pay. We do not consider the exact monetary value of WTP as an outcome of interest, but rather any changes in WTP, and in particular WTP a price premium. Numerical estimation of changes in the monetary value of WTP could represent an interesting future extension of our work.

A further consideration is that consumers sometimes use their impression of the amount of money spent on advertising as a cue to the quality of a new product (Nelson, 1974; Kirmani and Wright, 1989). The study by Kirmani and Wright (1989) explored the questions: how do people perceive advertising costs; why do perceived advertising costs affect brand perceptions (including which perceptions are affected); and when do perceived costs affect brand perceptions? Kirmani and Wright (1989) discussed one reason – costs as a signal of effort – in depth, proposing that people's default attribution is that high costs imply high quality, unless a salient undermining of this perception occurs. The authors propose that an inverted 'U-shaped' relationship exists between perceived advertising costs and brand perceptions, and that this would occur when content

was uninformative and/or involvement of customers was low. This shows that cost information could affect the consumer's perceptions of brand(s), and WTP a premium. In our experiments, we do not include advertising costs in cues presented to consumers, which complements Kirmani and Wright's (1989) proposals as we use information on costs other than advertising-specific costs, as cues to customers.

We also examine and present briefly the various types of information, in addition to price, which have been previously researched and known to affect the decision to purchase. Reference groups have been known to influence brand choice and purchase decisions [11] (Bearden and Etzel, 1982; Bourne, 1957), as well as price discount framing with regards to a reference product[12] (Janiszewski and Cunha, 2004). Prior beliefs, frequency cues and magnitude cues have also been studied for their effect on price perceptions in consumers[13] (Alba et al., 1994). Perceived service quality and value has also been shown to influence the purchase decision (Bolton and Drew, 1991). Incidental prices have also been demonstrated to affect WTP (Nunes and Boatwright, 2004). The vendor costs[14] in numerical terms have also been studied with regards to the perception of 'fairness' of prices, with research finding that "consumers deem it fair to increase the price of a good (service) when costs associated with the good (service)

[11] Research has found differing influence of reference groups depending on four types of product groups: public luxuries, public necessities, private luxuries, and private necessities; no single effect is confirmed (Bearden and Etzel, 1982, Bourne, 1957).
[12] Research has found consumers perceive a price discount to one product in a bundle as more or less appealing than an equivalent discount to another product in a bundle (Janiszewski and Cunha, 2004).
[13] Research has found that prior beliefs affected price perceptions in cases where shops advertise savings based on comparison of price to competition. Research also found the frequency of such comparisons of savings exerts a dominating influence on the belief of customers (Alba et al.,1994).
[14] Vendor costs are found by researchers to be an acceptable reason for increasing the price, with notable differences found between services and products (Bolton and Alba, 2006).

increase" (Bolton and Alba, 2006, p.259). However, research is largely missing into how qualitative cost information can influence both the WTP, and the WTP a premium.

In persuading consumers to pay a premium price, lastly, it is relevant to consider persuasion theory. The psychologist Robert Cialdini's famous work "Influence: The Psychology of Persuasion" (Cialdini, 1984) explores how, in making a decision about someone or something, consumers don't use all the relevant available information. Instead, they use only a single, highly representative piece of the total sum of all information that could otherwise be evaluated. Cialdini identifies six popular single pieces of information that influence a decision, identified as: reciprocity, commitment and consistency, social proof, authority, liking, and scarcity.

If we relate this theory to increasing the WTP a premium, which is a type of persuasion, then what we are hypothesizing in our research is an innovative way to persuade the customer by showing qualitative cost cues. The luxury brands from our opening story in Chapter 1, Burberry, Montblanc and Cartier, are applying the persuasion argument of scarcity. By burning unsold inventory, they are making classic economic principles of supply and demand work: when supply is reduced, the price will increase. Scarcity will drive up the willingness of consumers to pay a premium.

What we propose is instead an innovative, easy to implement, inexpensive and ethical way of increasing consumer's willingness to

pay a premium: communicating to the customers qualitatively the cost components that have gone into producing the premium of a product or service offering. Our experiments show it can be effective in increasing the likelihood to purchase a premium product by up to five times, compared to a regular base of consumers who would buy the premium offering even without the additional qualitative cues. In the next chapter, we will further explain how our proposed theory is innovative and expands existing marketing knowledge.

CHAPTER 3: CONTRIBUTION

I. RESEARCH GAPS and CONTRIBUTION

Having established the existing knowledge regarding waste, services, price design and bundling, and WTP, we now highlight the research gaps that our research aims to fill.

There are three basic gaps where our research contributes: theory on waste aversion, theory on how to design pricing and bundling, and theory on price cues affecting consumers' WTP. In addressing what prices should be and what to include in a product/service offering, we propose to take into consideration the effect of waste. Our contribution is the repellent effect of waste theory which should be considered when designing prices and value. In particular, our contribution is the new evidence which relates perceived waste in services to purchase decision. A further contribution is that qualitative cost cues can be an effective way to increase consumers' WTP a premium.

For waste aversion, we expand upon psychology theory on waste aversion in goods, to consider the repellent effect of waste in the context of services. Current theoretical insights suggest that there is no actual waste in services as no physical resources are lost, therefore consumers are predicted to not react to wasted services being included in the price. However, we postulate that consumers are repelled by waste which they perceive in the design of services, and repelled by any wasted value in the pricing of those services. Services still use resources, so resources are wasted when services are not used. When waste in service is perceived by the consumer and becomes salient at the point of considering a purchase, it will have a deterring effect on the purchase decision.

To improve the efficient use of resources, we propose offerings need to be targeted to consumers who will utilize them fully. If a service is perceived as wasteful by one consumer, there will be another consumer for whom the service component is perceived as useful. Consumer needs differ, this is the basic principle of marketing. Resources could be used to service consumers who would derive full value from the service, and avoid offerings of perceived wasted value to other consumers.

In affecting consumers' willingness to pay a price premium, our contribution is to propose that the communication of qualitative cost information about exogenous product features together with the price, can be effective in convincing customers to pay price premiums. Price-related consequences of cost information are not explored in marketing research. By isolating the brand effect in our studies, we explore and propose this new extrinsic product cue (qualitative cost information) and how it can increase the consumer's WTP a premium.

As such, the relevant theories to which this research contributes are: utility theory, psychology of choice, pricing theory in product line pricing, and factors affecting WTP.

For Utility theory, we are expanding the literature by proposing a repellent effect of waste which manifests as an inflection point in consumer utility, and thus affects purchasing decisions. The more value embedded in a product, the higher the utility, except if this value is perceived as waste and consequently negatively affects the decision to buy. This contributes to the utility theory for

services, and goods of perishable nature, which have previously been found to be resistant to waste aversion effect.

For Psychology of choice theory and Pricing theory, we are exploring further the line of research by Kahneman and Tversky, and adding a condition whereby perceived waste affects the purchase choice made by consumers. We also expand psychology research by Bolton and Alba, by demonstrating that service providers are indeed subjected to waste aversion by customers. Perishable goods and services are subjected to utility evaluation by consumers when deciding to purchase, to the point of self-defeating behavior and foregoing utility but still paying the same price, in order to avoid perceived waste. Previous theoretical knowledge is that while waste in products can lead to an aversion to waste, there is "no sense of wastefulness" for services (Bolton and Alba, 2012, p.374). Bolton and Alba (2012) observe that "for a service, re-purchase did not affect waste ratings" (p.374), and they even conclude that service providers can include waste in their products without any impact on purchase decisions by consumers. In our theoretical contribution and experimental setup, we argue that for a service, and for offerings of perishable nature, waste is even stronger in terms of leading to customer aversion. The physical good has less repellent effect, it stays and does not perish; while the service that you cannot use in a month or the perishable good that expires after a certain date have a strong repellent effect for customers. For services, the 'less is more' effect is even more important as they perish if unused.

For WTP, and willingness to pay a price premium, we explore the effect of qualitative cost information on consumer purchase decisions. This contributes to

cue evaluation theory and equity theory, by adding a new exogenous price cue which affects WTP by justifying price premiums.

In proposing the repellent effect of waste on WTP (1), and the qualitative price on WTP a premium (2), we contribute to uncover factors affecting both rational decision making (2) and bounded rationality decision making (1) by consumers.

Theoretical contributions

Our research makes the following contributions to theory:

1. Proposing a new theory of repellent effect of waste in services and perishable goods. Expanding utility theory by adding an inflection point, after which additional utility may negatively affect the consumers' decision to purchase.

   For Psychology of choice theory, showing that perceived waste affects purchase choices made by consumers, in particular by demonstrating that service providers are subject to waste aversion as well as goods providers. We propose that consumers purchasing a service may even have less tolerance for waste than when purchasing non-perishable products.

2. Proposing that Utility theory and models of pricing decisions must account for the repellent effect of waste in products. There is an inflection point at which utility becomes negatively affected by the repellent effect of waste, and therefore designing bundles and value included in services should take into account the value-in-use over the pure value of products.

Research modeling for consumer choice should reflect the heuristics about waste and the waste avoidance effect.

3. Proposing the first moderating factor (income) for the repellent effect of waste observed in consumer choice.
4. The importance of income as a moderating factor leads to the importance of matching product design to different customer segments, and even for individual consumer preferences. The demonstrated effect of income on consumer choice of product has important implications for personalization of product design in marketing.
5. Involving supply and demand factors in customized pricing tariff design in product line pricing. This encourages a sustainable model of business. It is in line with the observed repellent effect of waste, and encourages the avoidance of waste in business practices. Tailoring the value to consumer utility in use, and matching the product design to the demand is also in line with "consumer co-creation", a key element of service-dominant logic of marketing (Vargo and Lusch, 2014).
6. Proposing that additional qualitative information on cost can positively effect consumer decisions to buy, and enhance perceptions of the product value. This brings new knowledge into how costs affect WTP (in line with Kimani and Wright (1989)'s finding about advertising cost affecting the perception of a brand). We demonstrate how cost information can be presented as a pricing cue to improve the WTP a premium.
7. Adding exogenous qualitative cost information (in addition to previously-studied ethical and brand association) as a price cue effective in

communicating price premiums. This suggests a new factor in increasing WTP.

Empirical contributions

We test the willingness to purchase in a dyad of choice between two products with different cues communicated together with the price. We use a type A / type B control group survey questionnaire to demonstrate the effect of qualitative cost information on WTP a premium. This avoids the confusion of neoclassical theory and observed purchasing behavior in the treatment of price as a quality indicator.

Methodological contribution

The aversion to waste, as proposed by Bolton and Alba (2012) in psychology literature, uses a series of laboratory experiments with university students, who were paid or given class credit to participate. This methodology is naturally prone to respondent, survey and researcher bias.

In contrast, we conduct experiments with real market customers, who either need and use a telephone line, or come to the market to buy a perishable good (eggs) of their own initiative. There are limitations to every study, but the real life decisions and actual purchases made in our experiments decreases the level of research bias and respondent bias in our findings. Such field experiments can also help mitigate concerns about endogeneity and selection, and also aid in validation of theories in real world settings.

However, field experiments have limitations as well. Where limitations with collected data exist, it may be difficult to isolate the actual, underlying

behavioral mechanisms. To enrich our results, we conduct additional qualitative interview work regarding purchase decisions. Such qualitative research can give far deeper understanding of customers' motivation, compared to questionnaires and surveys alone featured in a lot of other research. We test our theory in market experiments and in field experiments, and strengthen the theoretical findings' robustness by qualitative information.

Our large-scale field experiments (experiments 5 and 6) represent an additional contribution in terms of testing theory with real people making real decisions with real money, in a real environment. Experiment 5 in particular represents a substantial undertaking, with more than 3 million respondents. Although a downside of field-based experiments can be difficulties in establishing counterfactuals that are not represented by one of the experimental conditions, a particular advantage relates to the reality of what has unfolded. Consumers have made a decision to purchase or not purchase the offering for their phone service (experiment 5) and the offering of eggs (experiment 1), and spent actual money on their decision. They have not been asked to tick a box on a survey or an online questionnaire that may ask them to imagine or position themselves into a situation which they have not experienced in reality. While we do value questionnaires and use them to verify and test further our hypotheses in experiments 2, 3 and 4, we concur with Weber et al. (2012) who state that "hypothetical actions are hypothetical, and some might argue that such data reflect cheap talk" (p.860).

To summarize, the main ideas of our research and the proposed theory focus on the following **three areas of contribution to marketing science**:

[1] We offer insights about waste aversion in services and actual WTP. We carry out experiments to support our theoretical propositions;

[2] We propose insights about the decision-making processes that people go through in terms of complexity and choice (relating to 'waste' and in the context of offers and price design), and how cost disclosure interacts with this;

[3] We discuss the importance of key variables such as income (or relative wealth), on those processes, and support our propositions with experimental insights.

There is little evidence of waste aversion in the context of services. This is the core contribution of our research. Although aversion to waste has been documented before in the case of tangible products, our novel insight is that services also carry waste aversion, and not necessarily less than that for products.

Hereafter we examine how the proposed theory of the repellent effect of waste (REW) compares to other theories in consumer psychology, economics, decision making and marketing.

REW and FRAMING effects

The framing effect is another possible theoretical explanation of the phenomenon observed in our experiment. There are studies demonstrating that the evaluation of value which the customer carries out may be 'framed' and can change depending on outside factors such as reference points, expectations or presentation. Consumers value an over-filled but small ice-cream cup with less quantity of ice-cream more than an under-filled though bigger ice-cream cup with more quantity of ice-cream inside, when they are evaluated separately (Hsee, 1998). Consumers perceive a higher salary to be lower if the other

colleagues earn more, compared to another workplace where colleagues earn less, but the salary is numerically lower (Bazerman et al., 1994). An interesting study has also found satisfaction to be higher among bronze medal winners compared to silver medal winners in the Olympics. Bronze winners thought they were close to not winning any medal, whereas silver winners thought they could have gone home with the gold: a frame-of-reference, less-is-more reversal (Medvec et al., 1995). The effect of endowment and contrast (Tversky and Griffin, 1991) is another demonstration of the same 'less is more' effect in evaluations. However, when these options of different objective value are presented together, the bigger quantity of ice-cream is valued higher, and the higher salary is preferred over the lower. Therefore, it is due to the comparison with the 'frame' that attribute valuation gets distorted from the normative valuation of utility.

In our experiment, it would be reasonable to expect that had we approached customers with both BEFORE and AFTER phone calling packages side by side, consumers would choose the BEFORE options which include more minutes for the same price. We would not have observed the 'less is preferred more' effect we did see. But the bundles of BEFORE and AFTER were presented one by one, and the frame of reference at the moment of the buy / no-buy decision was formed by the two-part tariffs available at that moment. The bundles BEFORE offered significant savings over two-part pricing, so frame of reference would not have been able to explain what we observed in the experiment.

The range over which attributes vary can also affect the weight and value judgments which consumers make (Mellers and Cooke, 1994). Research has

shown that some attributes show greater range effects than others. Examining the three attributes (monthly access fee, calling within city, calling inter-city) present in our bundles in comparison, we noted that the inter-city minutes carried majority of the value. Therefore, any waste in that component would have been hard to ignore.

REW vs. POVERTY

Another possible explanation of our results could be poverty, or customer frugality. We would like to address these separately as they relate to different concepts although could lead to similar results.

An observer might counter our theory of the repellent effect of waste by simply stating the common mis-conception: South-East Asia, consumers were simply poor and that is why they did not want to pay for anything they do not use. While by 2009 the economy of South-East Asia was still recovering from the big Asian crisis, the target lists for this experiment included customers who had had a fixed phone connection for 20 or more years, and had been paying monthly subscription and usage based fees as per the two-tiered tariffs. On a country level, this group constituted less than 2.8% of the total population. It was clearly a target group which is not on the poverty line.

REW vs. FRUGALITY

Consumer frugality is another interesting concept which could relate to our waste-avoidance observations. Frugality is different from poverty: poverty could be a temporary condition and consumers will change behavior once their economic circumstances improve, such as when they get a well-paying job or inherit a fortune. Frugality is more of a personal trait than a temporary

circumstance phenomenon (Lastovicka et al., 1999; Todd and Lawson, 2003). Waste avoidance is certainly a part of being a frugal consumer; frugality has been defined as "careful use of resources and avoidance of waste" (De Young, 1986, p.285).

It is interesting that Lastovicka et al. (1999) and Wilk and Cliggett (1996) trace discouragement of excess in acquisition to the earliest teachings of human history – all major religions praise restraint in worldly possessions. Some studies also trace a particular endorsement of frugality in Asian cultural values historically (Anderson and Wadkins, 1991; Wang and Rao, 1995), although both studies find that consumers in Japan and China in modern times move closer to the consumption-based cultures of America.

Looking closely at frugality, however, we can see that it is simultaneously control of waste together with "careful spending of money" (Lastovicka et al., 1999, p. 88). The re-use of products, the refrain from compulsive buying, and the sacrifice for the sake of obtaining a bigger goal in the future are all integral parts of frugal consumer reasoning. Choosing to pay the same amount of money but getting a small amount of minutes would not be in line with the frugality concept. Frugal customers would most likely avoid buying both the BEFORE and AFTER bundles altogether, they avoid packaged deals, bulk products and coupon offerings in general, as self-help literature demonstrates (Dacyczyn 1993; Longacre 1980). The restraint from consumption *altogether* is a leading principle in frugality, whereas our REW theory is about perceived waste preventing purchase. It is not consumption per se which is avoided, but *wasteful* consumption. Consumers do not mind subscribing to a new fitness club but they really want to be able to use all facilities and all number of visits. Without direct

side-by-side comparison, they would prefer to buy the entry pass which has a reasonable number of visits which can be fully utilized, for example, rather than the unlimited pass at the same price. They may end up paying more but want to be sure that they can use it thoroughly: a pronounced difference from frugality.

REW vs. financial crisis crunches

There have been a few studies which notice a similar shift in consumer behavior, moving away from conspicuous and wide-spread over-consumption, into a modest and value-hunting buying behavior, and attribute them to the financial and economic crises that have happened in recent history: 'the new consumer frugality', (Egol et al., 2010 and De Young, 1996). It is encouraging that those studies were done with American consumers, so what we observed is not an isolated Asian phenomenon. Finding "surprisingly little difference in the expenditure reductions among demographic segments" (Egol et al., 2010, p. 4) is also supportive of our observation that it is not poverty which explains the buying behavior decisions. Deal hunters, shoppers 2.0 and channel surfers are growing consumer segments in terms of buying behavior, fueled by the ease of research with digital media, the innovation and competition among retail pricing offerings. What our contribution adds is the surprising new finding that even with the price kept constant, these 'new' consumers will choose to buy an offering with less waste. It is not only the financial crisis motivating them, but also the drive for efficiency and utilization.

II. RESEARCH HYPOTHESES

Our research proposes the following hypotheses (formulated below as propositions:

Proposition 1: There exists a perception of waste in services.

Pure utility is overridden by evaluations of utility-in-use, or value-in-use. Consumers are more likely to choose lower absolute value which is fully utilized, rather than higher absolute value which remains unused. This occurs for perishable goods and for services, in addition to pure physical goods.

Proposition 2: Perceived waste in services repels customers.

Perceived waste has a repellent effect, and can turn consumers away. Giving less value for the same price can better sell a particular service, because perceived waste is removed. In developed economies, there may even be less tolerance for waste in services than there is for waste in physical goods. We propose that price is a reason that perception of waste in services is now more repellent to customers: as economies develop, the price of services becomes greater than the price of products delivering similar value[15]. This means consumers are now more tolerant of duplication in physical products, but seek to actively avoid duplication of certain services.

[15] While we cannot claim that overall services are more expensive than products, researchers into manufacturing and operations in services have noted a trend of changing substitution of cheap products for expensive services (Gino and Pisano, 2008) and explain how technology innovations have contributed to this phenomenon (Breidbach et al., 2018).

Proposition 3: Income moderates the strength of the repellent effect of perceived waste.

Income moderates the strength of the repellent effect of perceived waste in services. Different consumer segments have a different degree of sensitivity for waste. We propose that the repellent effect of waste is more pronounced in lower income segments, and has lesser effect in higher income segments. This may seem counter-intuitive; one might assume consumers with lower affordability would be willing to buy more, even if they would not use it, as getting more would be more important. However, we propose that the opposite is true: price-sensitive consumers are also sensitive about using everything that they buy. They are cautious in their spending and want to ensure that whatever they buy, is fully utilized. At the same time, customers with higher affordability are likely to buy *options*, even if they may never use them. Higher wage earners would buy the biggest phone bundle or the biggest internet bundle, even if they may not use it fully, and even when they know that possibility at the moment of the purchase decision. Customers on higher income segments buy the full unlimited access to the fitness club, even though they know they will only go 2-3 times per month. They buy the full season ski pass, even though they will go skiing once or twice this season. They will have the *option* to use these wasted services, should they choose to.

Conversely, lower income segments of customers don't want to pay for options. Rather, they want to pay and fully use what they buy, i.e. perceived 'utility in use'. Consumers operating on tighter budgets would buy single day passes for the ski run, and would buy single access tickets to the fitness club. They would calculate carefully how much the fitness club monthly pass would

amount to on a per visit basis, and they would buy the monthly pass only if they are certain they can do the number of visits that would make it the cheaper option. If they know that some days, they will not attend the gym, they would not be willing to buy it. The full value of the offering would not be used, it would be wasted. In the end, such consumers may end up spending the same amount of money in daily passes, but they have full utilization for the things that have been purchased; nothing goes wasted. Options are only useful if they are exercised, otherwise they become perceived waste.

Proposition 4: Cost disclosure affects willingness to pay price premium.

Disclosure of qualitative cost information about exogenous product features will positively affect willingness to pay a price premium. This effect works through the mechanism of extrinsic product cues from cue evaluation theory. Disclosing cost information in a qualitative way is an effective and relatively cheap way to justify a price premium, and convince consumers to pay a higher price.

Proposition 5: Income moderates the effect of cost disclosure on willingness to pay price premium.

The effect of qualitative cost information on WTP is moderated by income. The willingness to purchase when exogenous cues on costs are present is increased more in the lower income segments of consumers.

III. Overview of the experiments for this research

Table 4 below summarizes the experiments that were undertaken as part of this research. We give more details of each experiment in the following discussion.

Table 4. Experiments undertaken as part the current research

Experiment	Methodology	hypotheses	sample	Description	Variables studied	Methodology
Experiment 1: Field experiment	Qualitative	Propositions 1,2	$n =$ 74 working individuals	Field experiment to test the theory repellent effect of waste (REW)	Waste perception	Field experiment, face-to-face
Experiment 2: Survey 1	quantitative and qualitative	Propositions 1,2,3	$n =$ 24 working individuals	Testing the theory constructs	Waste perception, income	Online survey and interviews
Experiment 3: Survey 2	quantitative	Propositions 1,2,3	$n =$ 644 students	Test the theory for repellent effect of waste	Waste perception, income	Online survey
Experiment 4: Survey 3	quantitative	Proposition 4,5	$n =$ 128 students	Test the theory for price cues effect on WTP	Willingness to purchase, price cues	Online survey
Experiment 5: Cluster analysis	quantitative	Propositions 1,2,3	$n =$ 3,072,206 households	Market experiment on price design	Purchase decision	Outbound calls
Experiment 6: Interviews	qualitative	Confirmation of theory	$n =$ 209 households	Validating theory constructs for REW	Reasons for purchase decision	Outbound calls

Note: Ethics approvals for all experiments are provided in Appendix V.

Experiment 1: Field experiment, face-to-face

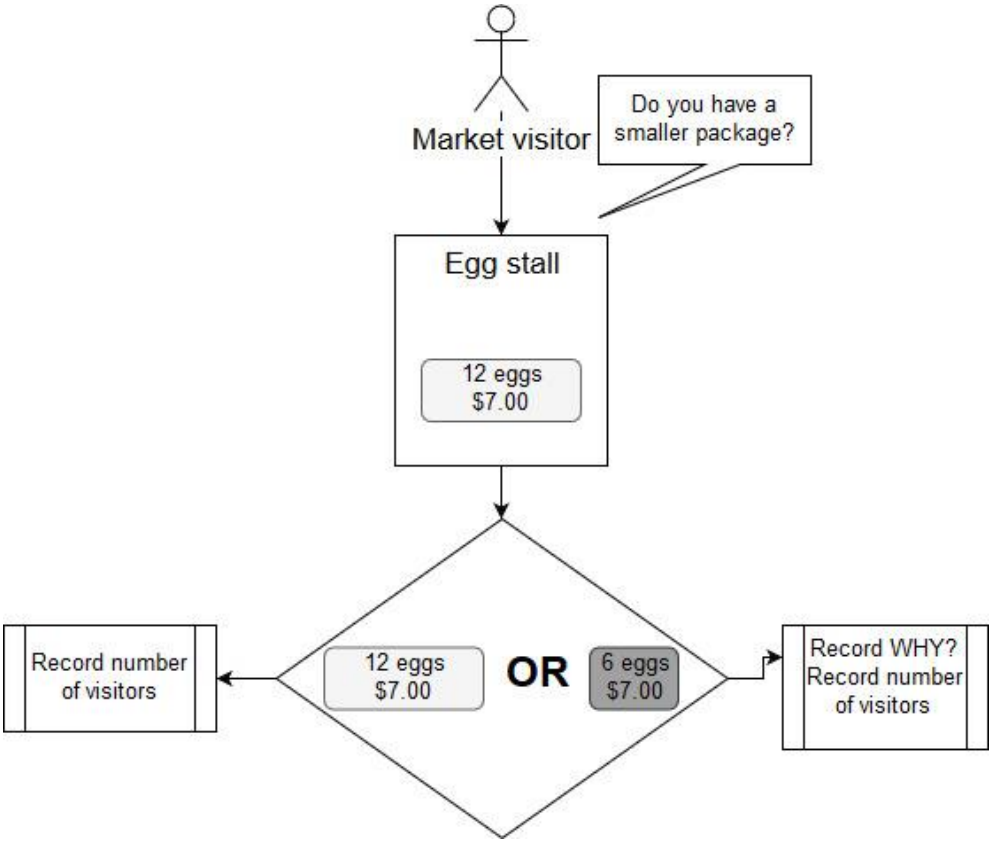
Participants

The study was carried out in Australia together with an industry partner, a chicken egg farm. Study participants were the end consumers who were shopping at a farmers' markets in same town, at the same day of the week, within the same market time. A non-representative sample of consumer responses was collected in the survey, with regards to their purchase decision for two options of egg packages offered. The data collection took place over several months in 2017. The participant size was 74. Both qualitative and quantitative information was collected.

Procedures

The consumers visiting the farmer's markets and coming to the egg stall of the industry partner were invited to participate in the study. They were assured participation was voluntary and responses remain anonymous. The participants did not receive any bonus or incentive for participating in the survey.

The market stall sold eggs in packets of one dozen. Market visitors who asked about smaller packages of eggs were presented with a choice: they could, for the same price, receive a carton of 6 eggs, or a carton of 12 eggs. The response was recorded (yes/no), and the participants were asked to explain the reason for their choice, which was also recorded. The diagram below illustrates the process for the experiment:


Market visitor
Do you have a smaller package?
Egg stall
12 eggs
$7.00
12 eggs
$7.00
OR
6 eggs
$7.00
Record number of visitors
Record WHY? Record number of visitors

Data collection

Data was collected in the period between January and September 2017, within the hours of 7am and 11:30am on Sundays at regular farmer's markets, at the same stall offering eggs. Data was recorded about the number of customers who asked about half-dozen packs, and the response of individuals, whether they took the offer or not, which package of eggs did they buy for the same price, and what was the reason for taking, or not taking the offer. The responses were anonymous. Respondents were asked to confirm that they are employed (working part-time or full-time), and between 25 and 80 years old.

Data analysis and findings

Qualitative analysis of the collected data for the reason of choice was undertaken, and data about the proportions of consumers choosing to take the offer was analyzed quantitatively. Data was collected and analyzed at the individual level.

The table below summarizes the count of customers, on each observation date, who took one of the two offers:

Table 5. Summary of customer counts, experiment 1

Date	Number of people who asked for half dozen eggs	Percentage of people who paid more and got less eggs, to avoid waste
15.01.2017	8	0.00%
29.01.2017	5	60.00%
05.02.2017	4	50.00%
12.02.2017	4	0.00%
04.03.2017	3	100.00%
11.03.2017	9	44.44%
09.07.2017	2	100.00%
16.07.2017	3	0.00%
23.07.2017	8	25.00%
30.07.2017	4	50.00%
06.08.2017	5	40.00%
13.08.2017	6	0.00%
20.08.2017	4	25.00%
27.08.2017	5	40.00%
04.09.2017	4	50.00%
Total	**74 respondents**	

The following table is a summary of the reasons provided for choosing the fewer eggs for the same price (paying the same price but getting half the eggs). Not all respondents chose to provide a long response:

Table 6. Summary of qualitative feedback, experiment 1

Reason for buying half dozen at the same price (quotes)	Frequency
"I want to buy more often fewer eggs, change them with fresh ones more often."	2
"Me and my wife live together, everyone else has moved out."	2
"It is only me in the house, I don't want to buy too many eggs."	1
"We are traveling next week, we only need a few."	1
"Living by myself, not much cooking, prefer to take fresh eggs every week."	1

“No guests, only the two of us.”	2
“Traveling, going camping next week.”	1
“Cooking only for two people.”	1
“Traveling, will be away after Wednesday.”	1

The two graphs below summarize the observed purchase decisions for eggs at the market stall, with the choice between 12 eggs or 6 eggs for the same price, per day. The top graph shows the purchase decisions by absolute number, and the lower graph shows the percentage of people who chose to pay the higher price (dozen price) for getting half the eggs, in other words they chose to pay more for less, in order to avoid waste:

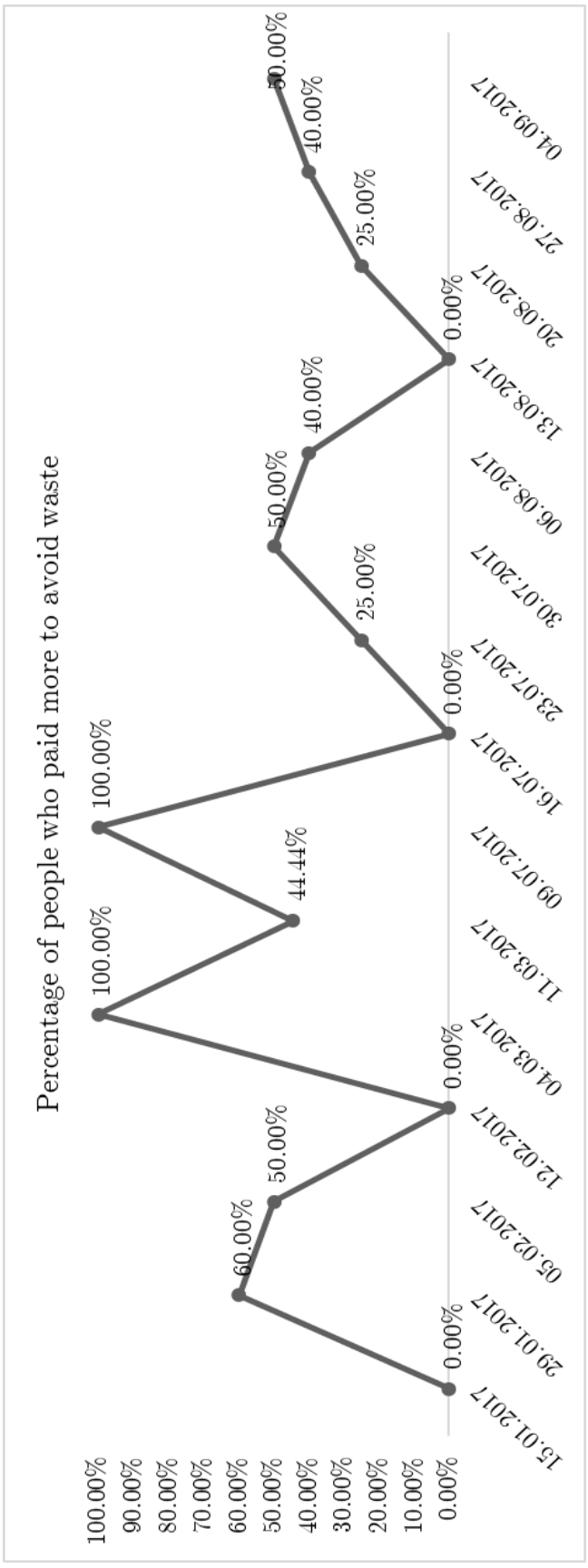


Figure 1. Graph of percentage of respondent who paid more for less, to avoid waste

Table 7. Descriptive statistics for percentage of people willing to pay the dozen price and get half a dozen package (percentage given as decimal).

Mean	**0.38963**
Standard Error	0.083818
Median	0.4
Standard Deviation	0.324627
Minimum	0
Maximum	1
Observations count	15

Overall, on any given market day during the experiment, less than 10 people asked for smaller package of eggs. This is less than 1% of all the people who shop at the stall. Upon being offered a higher price for half a package (same price as the full package), a varying percentage of them choose to take it, but on average 39% of consumers looking for half-dozen did not mind paying the higher price. This is the first important result of the experiment.

In neo-classical economics theory of consumer behavior (as promulgated, for example, by Adam Smith, David Ricardo, John Stuart Mill, Alfred Marshall, and Paul Samuelson), actors behave and interact following the 'rationality axiom': a rational economic agent makes decisions to maximize their perceived utility (or self-interest). Firms act to maximize their profits from producing and selling goods and services, and households act to maximize their perceived utility (or satisfaction) from consuming the goods and services. If consumers have to choose between getting 6 eggs for $7, and getting 12 eggs for $7, they should maximize their utility by purchasing the full dozen.

While the rationality axiom is very useful in building models and the determination of prices, volume of trade, and efficiency improvements, it is not straightforward to model the wider range of behaviors and decisions that we see in field experiments. They appear to deviate significantly from what could be considered 'rational'. Therefore, in the tradition of behavioral economics theory, we built the hypothesis of the repellent effect of waste which affects purchase decisions of consumers. In the experiment, on average 39% of consumers per market chose to get less for the same price, thus choosing not to maximize their utility from the product offered.

To explore the reason for this choice, the qualitative analysis of the answers recorded was undertaken. Table 6 lists the answers, which reveal that the fear of wasting the eggs was the major driving factor behind the consumers' purchase decision. The results of the experiment offer some initial support for hypothesis 1 and 2 of this study, that waste is perceived by customers and has a repellent effect on their purchase decision(s), even to the extent of buying half the quantity for the same price (choosing half the utility).

Experiment contribution

This experiment represents our initial exploration and test of whether it is possible that consumers consciously choose to buy less for more money, and do so in order to avoid waste from their product. Rather than buying 12 eggs for the same money, and throwing half of them away, on average 39% of the day consumers looking for half dozen chose to still pay the full price and buy half the

eggs. This could be explained by the feeling of guilt and remorse from having to throw away good food. Avoiding waste makes consumers feel better about this purchase decision, and they associate some utility with this, which justifies paying the high price.

It is important to note that this experiment was based on real purchase decisions, of real customers, with real money, over a 9 month period. The credibility of actual purchase decisions compared to declaring willingness to purchase in a survey avoids the social desirability bias and acquiescence bias common in other WTP investigations in marketing.

Based on the analysis of the study results, our proposition about waste in offerings (proposition 1), and our proposition about waste repelling customers (proposition 2), have received initial field work support.

Limitations

There are two important points to address about the limitations of this experiment. Firstly, it is worth to note that the average percentage of people who chose to buy less for the same money (38.96%, rounded to 39%) is based on a relatively small sample in one market scenario, buying one type of product.

Secondly, our main study contribution is towards the existence of waste in service offerings, but the first experiment is done with perishable goods. Perishable goods share some characteristics in common with services, however, our goal here was different. The experiment was an important demonstration of how waste can repel customers, to the point where they are willing to pay a high price and get less

of the offering. This could be found true experimentally for both in products and services, which was our goal, similar to the research work carried by Bolton and Alba (2012). In experiment 6, we will further test a similar experiment, in which consumers are willing to pay an effectively higher price for less offering in the context of a services.

Experiment 2: Online Survey and Qualitative interviews

Participants

The study was carried out among working adults, aged between 25 to 54 years, in professional jobs in Europe and North America. The participant size was 24. The sampling was convenient and purposive and based on the following general inclusion criteria: (a) have a different income level from participants in experiments 4, 5, and 6; (b) be an active consumer and buyer of different products; and (c) be the main decision maker in the household.

The reason behind the small sample size was to qualitatively explore, and then discuss the survey with all participants after they have completed it. The goal was to confirm the reasonableness of the survey questions using post-survey interviews in order to prepare for a later, second wave of the same survey with a bigger participant size.

To differentiate from the Bolton and Alba (2012) results, we had to test both products and services in one survey, to see whether the differences in perceptions and in attitude towards waste in both had remained as previously theorized, and whether research in different geographical locations would confirm our theory. In our experiment, we wanted to qualitatively test our propositions in services as well as in products. Experiment 2 tested the attitudes to waste in product offerings. We looked to test whether we could find a repellent effect of waste in products as well.

In selecting a product class to serve as the arena of study for the repellent effect of waste, several criteria were used. In particular, a category was sought to comply with the initial theory in the following ways:

(1) Products which have prices that have significant variation across alternatives – in other words, a product where different prices exist for the delivery of different values.

(2) Products which have a general, universal appeal across different income segments of consumers. A wide range of consumers purchase the products frequently and regularly.

(3) Products which can be perceived as wasted in the context of situations presented in the survey.

Based on these considerations, milk and shampoo were selected as the product classes of interest.

Procedures

The survey was distributed to participants online in 2015 and 2016. Participants were reassured that the survey and the results were anonymous, and participation was voluntary. No payment nor reward was offered to the participants. Google forms platform was used to distribute the survey. The survey questions were designed to address the repellent effect of waste theory, propositions 1, 2 and 3, and to test whether the questions accurately reflect the concept of waste in offerings, especially against previous research findings. Following each response, a short semi-structured interview was carried out with participants, with the major goal to find out whether their understanding and response to the survey questions, and the design of the questions, was presenting the effect of waste in the correct perspective.

Participants were given the context of a situation in which they need to make a purchase decision between two alternatives. The two choices were with the same prices, but offered different quantity of the product, and therefore the value of each option was different, although the price remained the same. Consumers had to choose one of the two options.

The context of each question was chosen was so as to ensure that waste was perceived in the purchase of one of the options: namely, the option offering more value for the same price. For example, consumers were told they are going on a two-day trip, and asked to choose between buying a 50mL or a 750mL shampoo bottle, both products offered at the same price. In other words, given that you spend the same amount of money, would you like to waste a product, as a shampoo

bottle of ¾ of a litre cannot be all used up in 2 days by a single person. Similarly, consumers were asked to choose between buying a smaller or larger milk bottle for a short stay in a house - just 2 days. The two options gave a milk bottle of 100mL, or a milk bottle of 1L, both for the same price. The actual presentation of the questions is given below:

Q1 shampoo: You are going away on a trip for 2 days. Which one would you buy?

Q2 milk: You are staying in a house for 2 days. Which one would you buy?

To test our proposition 4 about the effect of income on the desire to avoid (or to tolerate) waste in purchases, we also asked consumers to self-rate their income level as either the same, or below or above the average income for their region / country. This measure was deliberately left non-numeric, to ease comparison across the different countries, currencies and relative value of currencies of respondents.

The full questionnaire for experiment 2 can be found in the appendix.

Data collection

Data was collected about the response of decision-makers. Qualitative interview responses were summarized, looking for common themes and any issues raised by participants.

Data analysis procedure

Data was collected and analyzed at the individual level for the answers to the questions. After the completion of the survey, short interviews were conducted with participants, to discuss their understanding of the survey. Qualitative analysis of the collected interview data was undertaken, in particular to elicit common understanding of the concept of waste from the questions in the survey. The resulting analysis was used to revise and improve the survey for use in experiment 3 with a bigger group of respondents (experiment 3).

Analysis and Findings

A summary of the results from 24 respondents in the survey can be found below.

For the 'shampoo' question, option 1 offered the 50mL bottle, and option 2 offered the 750mL bottle, both had the same price.

For the 'milk' question, option 1 offered the 100mL bottle, and option 2 offered the 1L bottle, both had the same price.

The graph below compares the choice on percentage basis for all respondents:

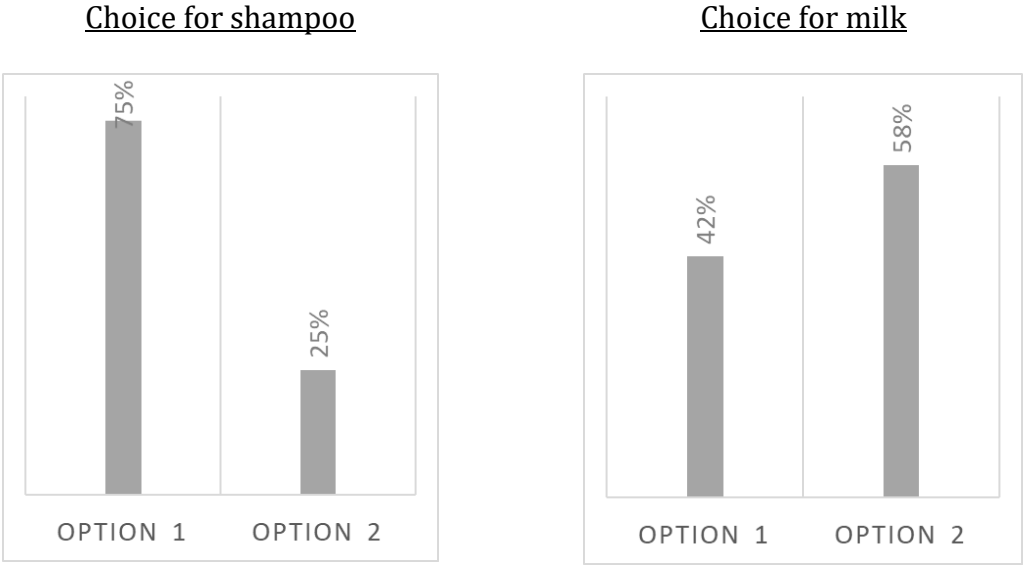


Figure 2. Comparison of choice for shampoo and choice for milk, small quantity for same price is Option 1

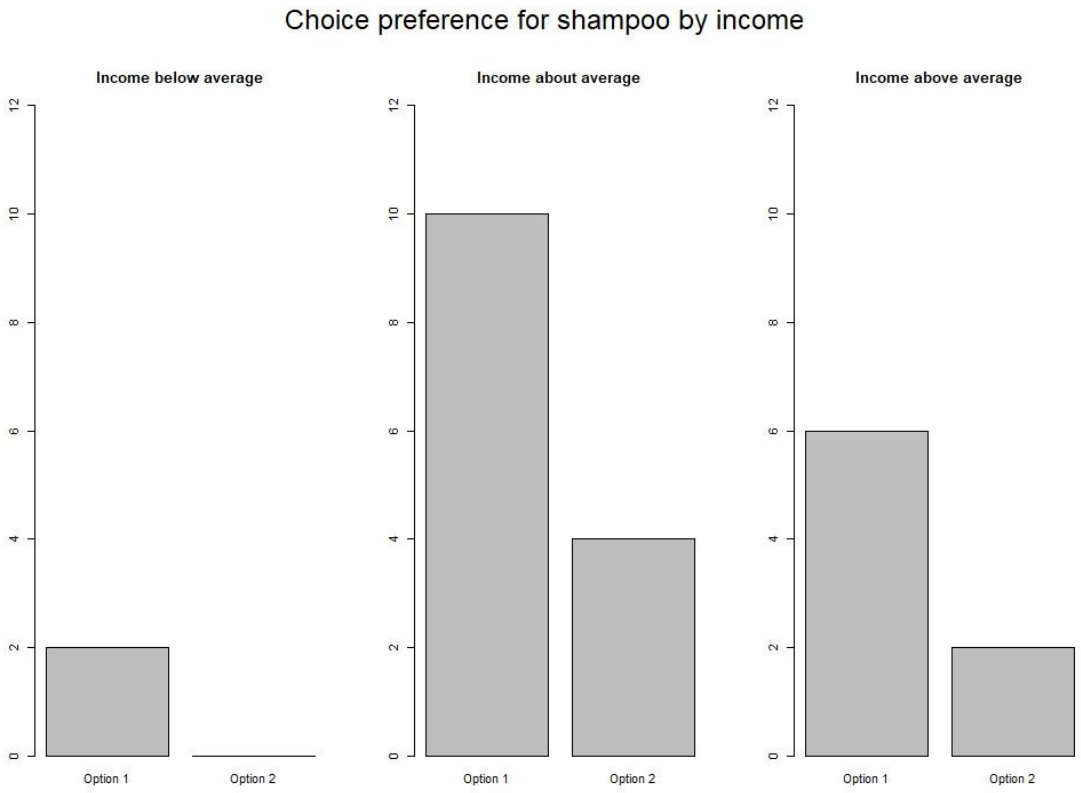
Respondents' choice	Shampoo	Milk
Option 1	18	10
Option 2	6	14

The chi-square statistic is 5.4857. The p-value is 0.019172. This result is significant at $p < .05$.

A majority of respondents took the smaller quantity of shampoo for the same price, but took the bigger quantity of milk for the same price.

The responses were distributed by Income categories as follows:

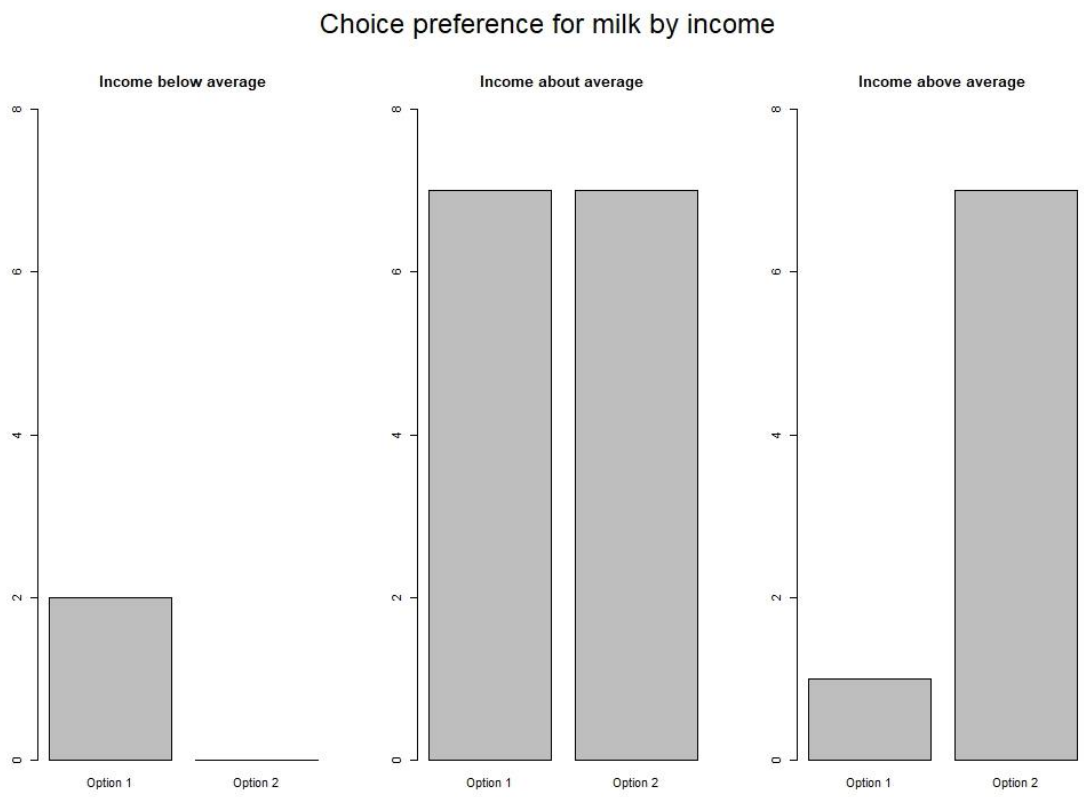
Q1. Choice of shampoo size, by income of respondents



Shampoo choice	Income Below the average	Income About average	Income Above the average
Option 1	2	10	6
Option 2	0	4	2

The chi-square statistic is 0.0803. The p-value is .960641. The result is not significant at $p < .05$.

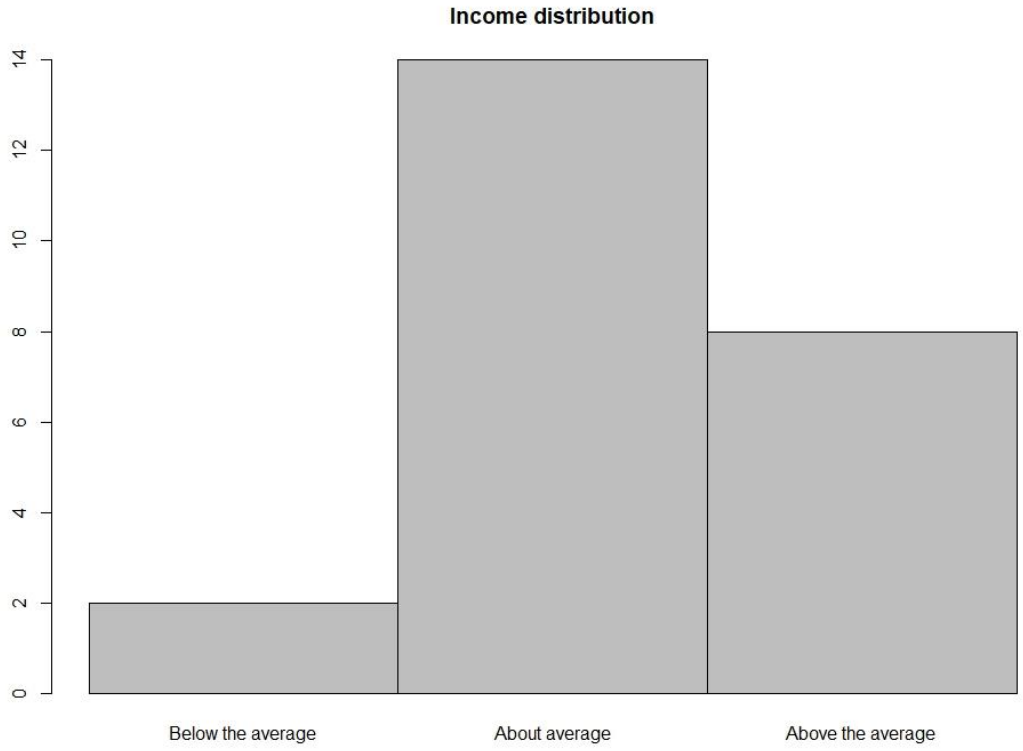
Q2. Choice of milk size, by income of respondents



Milk choice	Income Below the average	Income About average	Income Above the average
Option 1	2	7	1
Option 2	0	7	7

The chi-square statistic is 3.9931. The p-value is .135806. The result is not significant at $p < .05$.

The distribution of income is bell-shaped, suggesting normal distribution, with majority of respondents indicating they are about the average income level. The differences will be explored further in the discussion section.



Discussion

The small sample size of experiment 2 prevents highly credible conclusions to be drawn directly. However, it is interesting to note that there are differences in distributions among the shampoo and milk purchase decisions. For shampoo, across the income categories, consumers universally preferred the smaller shampoo bottle for the same price. This supports our theory propositions 1 and 2. Even for a higher price per mL, consumers would like to buy the smaller bottle and avoid waste. For milk, however, consumers with below the average income preferred the smaller quantity of milk, consumers of about the average income were equally divided between the options, and consumers with above average

income would overwhelmingly choose the bigger milk bottle for the same price. This observed heterogeneity supports our proposition 4, where the effect of income on perception of waste is different, with lower income segment consumer being very sensitive to waste, and not wishing to purchase a perishable product, such as milk, knowing that it will go to waste if not consumed within 2 days. They are willing to pay more per mL, but make sure that all the product is used. In the higher income segments, tolerance for waste in purchases is higher; consumers do not mind spending on the bigger bottle, even if it might not all be used. There will still be an *OPTION* to use the milk, and even if it goes to waste, it does not alter the purchase decision, which should be the rational choice according to any economic theory on price and value.

The differences between the answers to questions on milk and shampoo prompts further consideration on the perishability of goods and is intrinsically linked to the distinction between goods and services. Services were often circularly defined as perishable products. In this context, milk could be seen as a perishable good, it has a limited shelf life and expires quickly, almost like a service. If you don't use it within a short pre-defined time, it is gone. Shampoo, on the other hand, is a more durable and longer-lasting product than milk. It does not expire for a long time and can be stored as inventory. Based on these distinctions, parallels can be drawn between the perceived waste in perishables versus durables. Our results seem to show that respondents prefer to avoid waste in durables (18 to 6, for buying a smaller shampoo for the same price) but would tolerate waste in perishables (14 to 10, for buying a bigger milk bottle for the same price), which is

what Bolton and Alba (2012) also found. However, if we dissect further, the income levels reveal an interesting reversal for perishable products – and possibly for services in the same category: 2 to 0 would buy the smaller milk bottle for the same price in under average income earners, but 7 to 1 would buy the bigger milk bottle for the same price in above average income earners. The initial overall choice of the bigger bottle is entirely due to higher and average income earners; lowest income earners would buy the smaller size of both products; they would like to avoid waste in all categories and use everything that is purchased.

In the follow-up qualitative interviews of respondents, the following issues emerged as needing to be addressed before a bigger audience could be surveyed:

- Respondents thought more clarification was needed about the circumstances given in each question. For the milk question, was the respondent in the house alone or with other people / family. A litre of milk might not seem too much if a family is in the house for 2 days.
- Respondents might be able to bring the shampoo back from the trip, even if unused after 2 days. Again, this links to the consideration of perishability. Were there any luggage considerations or weight considerations that might affect consumers' decision of which size to buy?

Based on the analysis of the study results, the questions in the survey were revised and prepared for our next experiment, involving a much larger participant size. Further clarification was added to the questions in the survey, to clarify who the respondent was traveling with, and who they were staying with on the trip.

The main outcome from experiment 2 was to get some validation on waste perception in the questionnaire about purchase decisions. It was also interesting to gain some initial confirmation for our proposition 4, and the heterogeneity observed among consumers purchase decision towards waste inclusion in offerings, depending on their income levels.

Limitations

Experiment 2 was carried out with a small number of 24 respondents. As such, deriving statistically significant relationships from the data was not our goal. A larger sample size is needed to ensure a representative distribution of the population and to be considered representative of groups of people to whom results will be generalized or transferred. However, the experiment was designed as a preparatory phase for experiment 3, carried out with a much bigger group of respondents.

Self-reporting of income is another limitation of the study, which is common to all survey-based questionnaires.

Experiment 3: Online survey

Participants

This study was carried out in Australia among undergraduate students of Business Management and Economics in 2017 and 2018. The participant size was 644 students. The students came from various countries, and were aged between 20 to 26 years.

Procedures

The survey was distributed online to students who were enrolled in undergraduate courses at the College of Business and Economics. Participants were reassured that the survey and the results were anonymous. Participation was voluntary. The survey questions were designed to address the repellent effect of waste theory, propositions 1, 2 and 3. The students did not receive any award or payment for participating in the survey.

The survey focused on the purchase choice that respondents would make, in a situation where part of the offering they buy would be wasted. The questions were testing 2 different products: milk and shampoo. The survey was similar to the one used in experiment 2. Some clarifications had been added after experiment 2, in order to ensure that in both product categories, there was waste perceived in the purchase of the bigger size of product (for example, the phrase "you are staying in a house alone for two days" was used to clarify that the expected consumption would be less than the quantity of the product offered by option 2).

Data collection process

Data was collected about the response of individuals anonymously. Data was collected and analyzed at the individual respondent level.

Data analysis and findings

The responses were distributed as follows:

For the 'shampoo' question, option 1 offered the 50mL bottle, and option 2 offered the 750mL bottle, both had the same price.

For the 'milk' question, option 1 offered the 100mL bottle, and option 2 offered the 1L bottle, both had the same price.

The graph below compares the choice on percentage basis for all respondents in experiment 3:

Respondents' choice	Shampoo	Milk
Option 1	243	284
Option 2	401	360

Figure 3. Comparison of percentage choice for shampoo and milk, less quantity for same price is Option 1

The chi-square statistic is 5.3987. The p-value is 0.020152. The result is significant at $p < .05$.

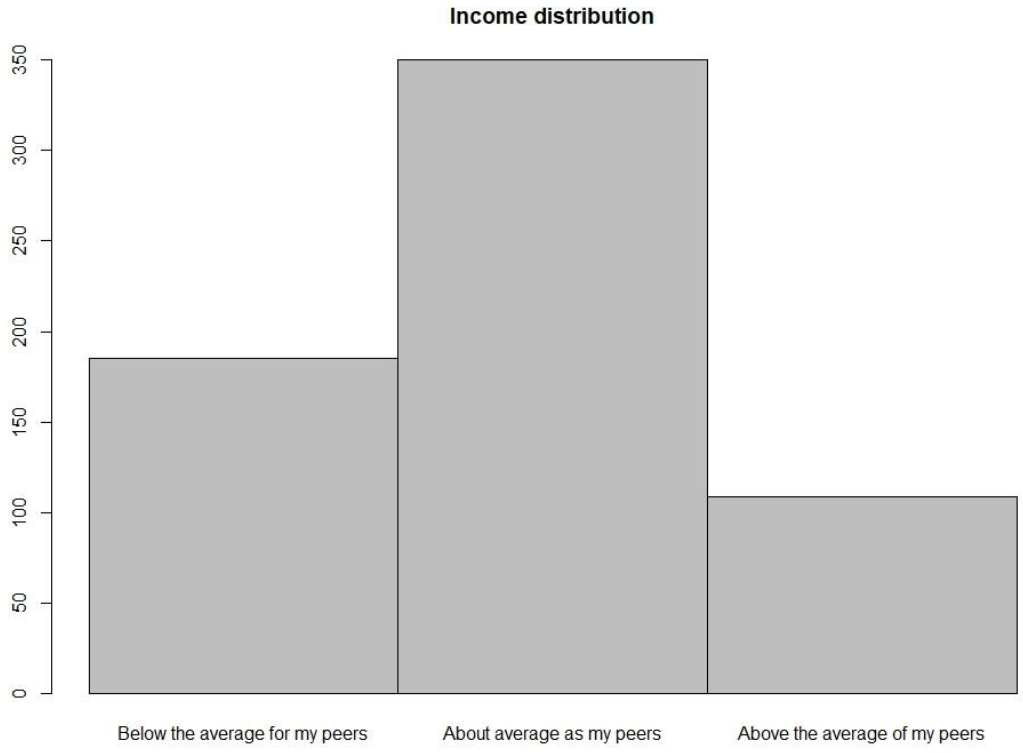
A majority of respondents took the bigger quantity of shampoo for the same price AND took the bigger quantity of milk for the same price. However, it is worthwhile to note that the proportion of respondents who chose to buy the smaller size for the same price, the 'non-rationale' option, was significantly different from zero. 38% of respondents chose the 'irrational' smaller shampoo

bottle for the same price, and 44% of respondents chose the 'irrational' smaller milk bottle for the same price.

In this survey, we added additional clarification to make the waste of products in the situations described clearly prominent. If waste was not an issue, and rationality theory was guiding respondents in making the purchase choice, we should have seen close to 0% of respondents choosing to pay the same amount of money for significantly less value. Therefore, the results from experiment 3 confirm our proposed effect of perceived waste on consumer WTP.

Next, we look at the effect of income on the purchase decisions. The distribution of income is given in the following figure, with a majority of respondents indicating they are about the average income level:

Figure 4. Income distribution of respondents, experiment 3



To test theory proposition 4 - the effect of income on the way people tolerate the perception of waste and how they react to waste when purchasing - we also cross-tabulate the respondents between income level and the options they have chosen. The graph below represents a summary of these distributions graphically:

Q1. Choice of shampoo size, by income of respondents

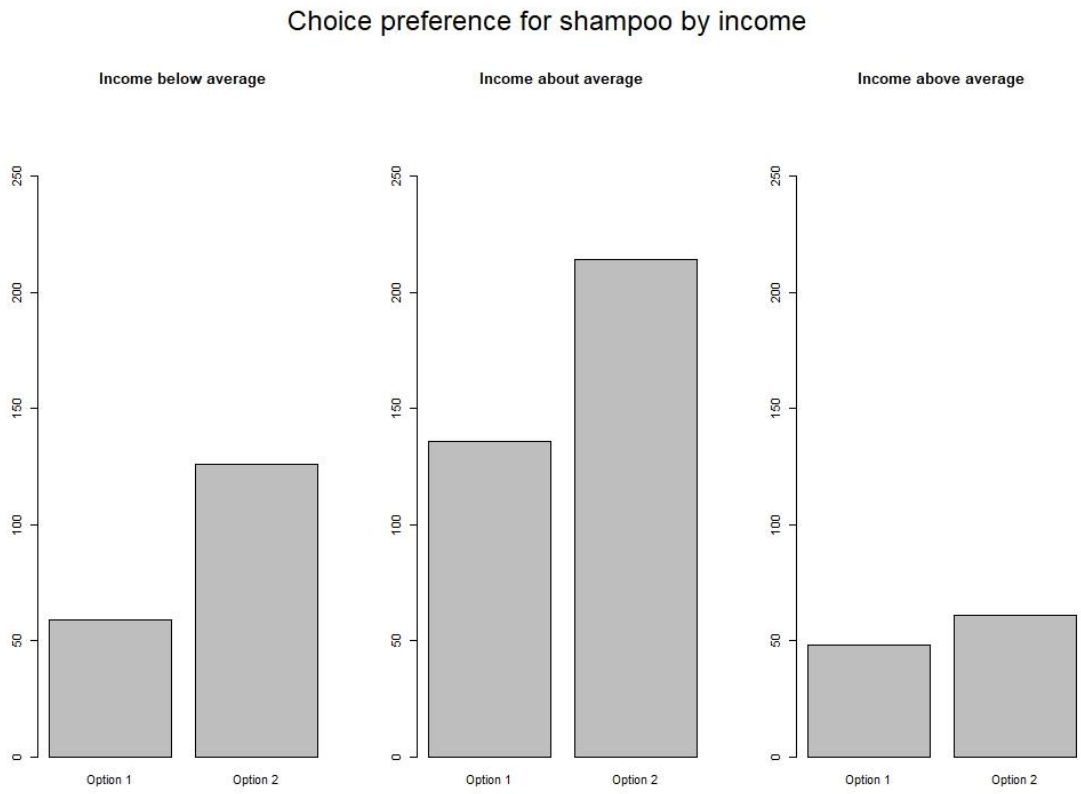


Figure 5. Choice of preference for shampoo by income. Less quantity for same price is Option 1

Choice of shampoo by income	Below the average for my peers	About average as my peers	Above the average of my peers
Option 1	59	136	48
Option 2	126	214	61

The test for significance using Chi-squared test of independence, at alpha = 0.05 significance level:

Null hypothesis: Income has no effect on the difference of choice of shampoo size.

Test hypothesis: Different income levels do differ in their preference of shampoo size.

```
X-squared = 4.7182, df = 2, p-value = 0.0945
```

The p-value is indicating that the result is not significant at $p < 0.05$. There is an observed difference between the purchase decision of the higher income group, with more people choosing to tolerate waste in their purchases, but the observed difference is not statistically significant. The results from this survey on shampoo do not confirm the hypothesis that income moderates the purchase decision with regards to waste included in purchase offers.

Q2. Choice of milk size, by income of respondents

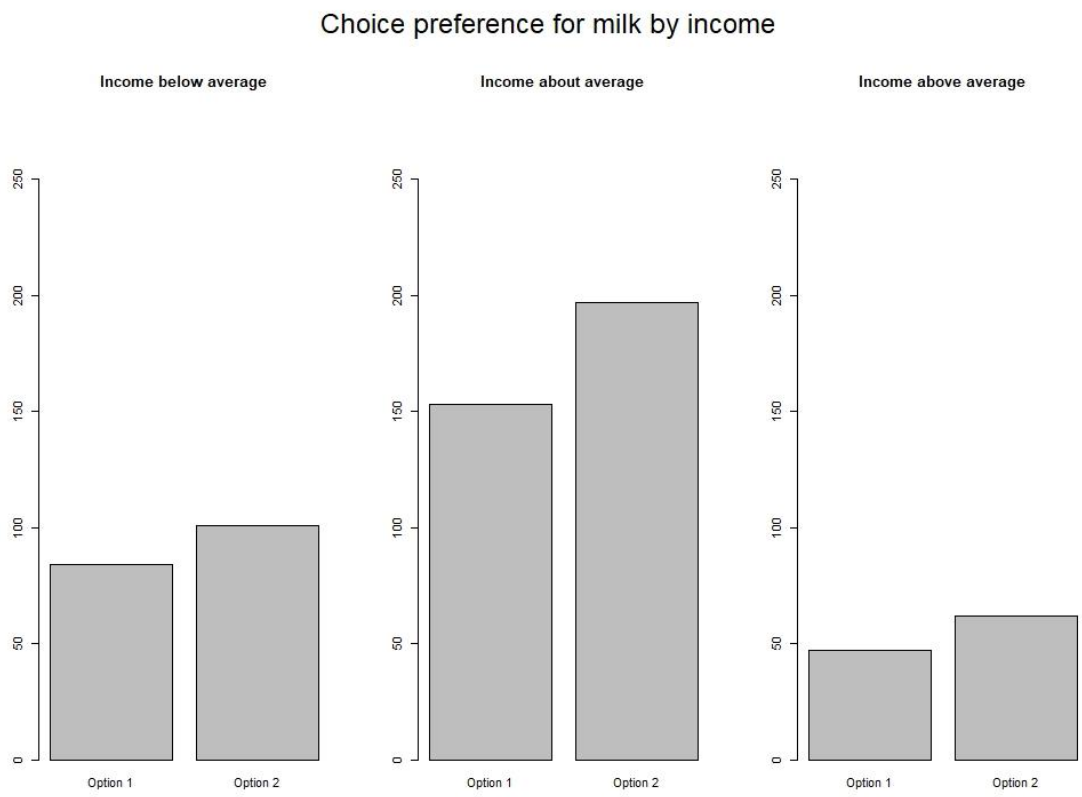


Figure 6. Choice of preference for milk by income. Less quantity for same price is Option 1

Choice of milk by income	Below the average for my peers	About average as my peers	Above the average of my peers
Option 1	84	153	47
Option 2	101	197	62

The test for significance using Chi-squared test of independence, at alpha = 0.05 significance level:

Null hypothesis: Income has no effect on the difference of choice of milk size.

Test hypothesis: Different income levels do differ in their preference of milk size.

```
Pearson's Chi-squared test
X-squared = 0.19153, df = 2, p-value = 0.9087
```

The p-value is indicating that the result is not significant at $p < 0.05$. The results from this survey on milk choice do not support the hypothesis that income moderates the purchase decision with regards to waste included in purchase offers.

Analysis

Our main goal with experiment 3 was to test, on a larger scale and with a different population, our propositions about the repellent effect of waste in purchase decisions, and our proposition that income moderates that effect. The results of experiment 3 differ from the results from experiment 2. Majority of student respondents chose the bigger bottle of shampoo and the bigger bottle of milk for the same price. However, we find support for our proposition that waste has an effect on purchase decisions as between 38% to 44% of respondents also chose to buy the *smaller* quantities for the same price, although this is a minority. It is clear that factors other than pure rational utility was driving the purchase decision of the 'option 1' groups, and we propose this is the desire to avoid perceived waste. Approximately 4 people out of 10 were willing to pay the same and get a lot less for their money, in order to avoid wasting.

There is a need to examine further the differences between the income groups surveyed so far. This current experiment 3 is the only one which was

carried out entirely on a respondent basis of students. In our other experiments 1, 2, 5 and 6, the respondents were working adults, often with households to manage. There is room for further investigation of this difference in the respondent base. Students could represent a relatively uniform distribution in terms of disposable income, and therefore not a good population for studying the moderating effect of income.

Limitations

The study involved only students, in a narrow age group (20 to 26). In investigating income effects, the students as a respondent group could represent a biased sample, as often students within a similar and lower income group compared to the rest of the population. The study of income differences did not lead to a confirmation of our theory propositions in experiment 3 but it needs to be explored in a different population group with wider variations in income. We will do this in studies 5 and 6.

Experiment 4: Online survey

Participants

The experiment was carried out in Australia among undergraduate students of Business, Management and Economics. The participant size was 128. Some responses were incomplete, so the complete responses recorded were 119. The students come from various countries, and were aged between 20 to 26 years.

Procedures

The survey was distributed online to students who were enrolled in undergraduate courses at the College of Business and Economics. Participants were reassured that the survey and the results were anonymous, and participation was voluntary. Participants did not receive money nor a reward for participating in the survey. The survey questions were designed to address the effect of qualitative cost information as price cues on the willingness to purchase (propositions 4 and 5).

In selecting product classes to serve as the arena of study for the effect of qualitative cost information disclosure on WTP, several criteria were used. In particular, product categories were sought to comply with our theoretical propositions testing as follows:

(1) Prices on the market consistently include a premium for some manufacturers / service providers, compared to others. Brands do not need to be disclosed for this price differentiation to be acceptable in the product selected.

(2) Products have general, universal appeal across different income segments of consumers. A wide range of consumers purchase the product regularly.

(3) Products include both hedonic and utilitarian goods, and include a service element.

(4) Products are non-durable, consumed immediately, not readily storable. Products which have storable value or appreciate in value over time would interfere with the willingness to pay a price premium at the present moment, which is the interest of this research. We looked for products of immediate utility which would expire in the near future.

Based on these considerations, airline tickets, coffee and sandwiches were selected as the product classes of interest.

Two versions of the surveys were developed, and testing was done using the A/B survey experimental approach[16]. We used choice experiment, consistent with Lancaster's (1971) theory of utility maximization. In our choice experiment, consumers were asked to choose between two product descriptions.

In survey A, participants were asked to choose which one of two alternatives they would buy. There was no empty /no buy alternative. The information presented for each product included only the type of product and the price. No visuals nor brands were presented. One product variation is priced at an average market value, and the second product variation is priced at a premium of 10% higher than the first one. Several studies have found customers are willing to pay

[16] A/B testing is a statistical method of testing a hypothesis by presenting two studies, A and B, which are identical *except* for one variation that might affect a user's behavior. The methodology is practically identical to a between-subjects research design.

an average 10% higher for attributes such as 'fairtrade' (De Pelsmacker et al., 2005) or 'ethical' (Mai, 2014), so we have employed the price premium quantum confirmed by that research to be feasible in the willingness to pay a premium.

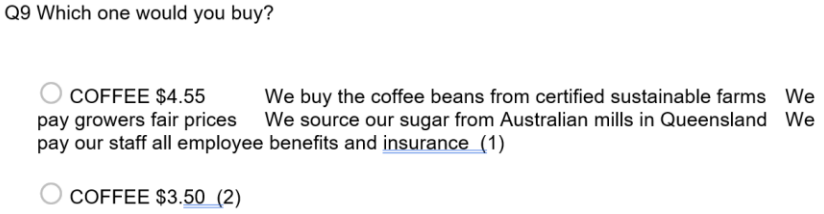
In survey B, participants were again asked to choose which one of two alternatives they would buy but the information presented next to the two alternatives was different from survey A. The information presented for each product included the type or product, the price, and additional, qualitative cost information (no numerical value) about the production / creation of this product or service. The qualitative cost information pertained to non-core, extrinsic characteristics of the product, and features which cannot be observed by consumers even after they have bought and consumed the product or service. The so called 'credence' attributes were selected, which also translated into significant costs and investment by the manufacturing /servicing firm. There was no empty /no buy alternative.

For example, for the offering of a coffee in a café, the following were the credence attributes listed next to the product with the 10% price premium:

- Sourcing the coffee beans from certified sustainable farms
- Paying fair prices to growers
- Sourcing sugar from Australian mills
- Paying benefits and insurance to café staff.

The coffee offered at the lower price (no price premium), had no credence cues next to the price. The figure below shows an extract from survey B for illustration.

Figure 7. Extract from Survey B including qualitative costing cues



The full survey questionnaire is available in appendix IV.

Participants were randomly assigned to either survey A or survey B, every time that the survey link was clicked. The system does not allow for a participant to do both A and B surveys.

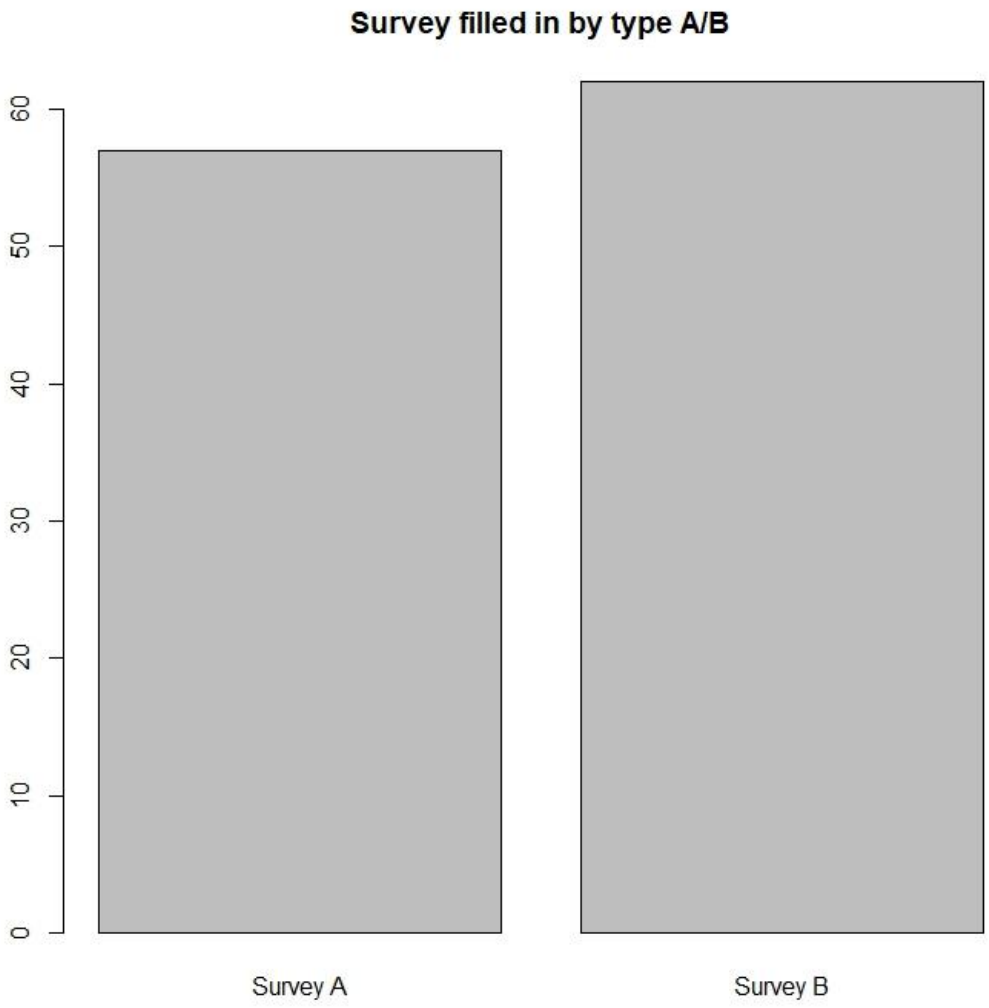
We investigate the impact of the qualitative information cue attribute on consumer's willingness to pay a price premium, rather than on product evaluation. Product evaluation does not necessary lead to a purchase decision, as has been demonstrated in research. By doing the control group (survey A) and the treatment group (survey B), we also isolate the effect of consumers who always buy the more expensive product, even without any further value knowledge (survey A). Estimating the change in consumer's willingness to pay a price premium with the additional cues *compared* to WTP without the cue attributes, would give a more realistic evaluation of the additional increase in WTP a premium.

Data collection

Individual response data was collected. All responses were anonymous.

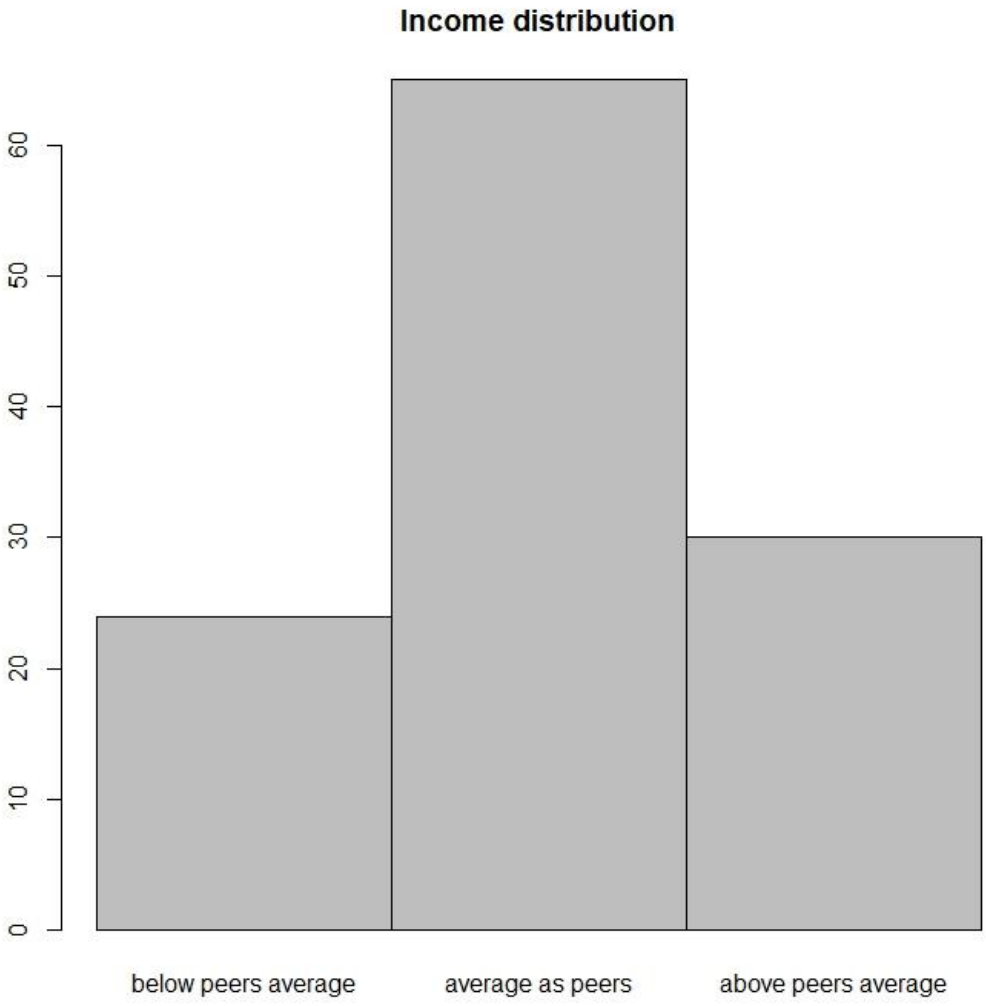
Data analysis and findings

Data was collected and analyzed at the individual level. The distribution between the two types of A/B surveys was almost equal:

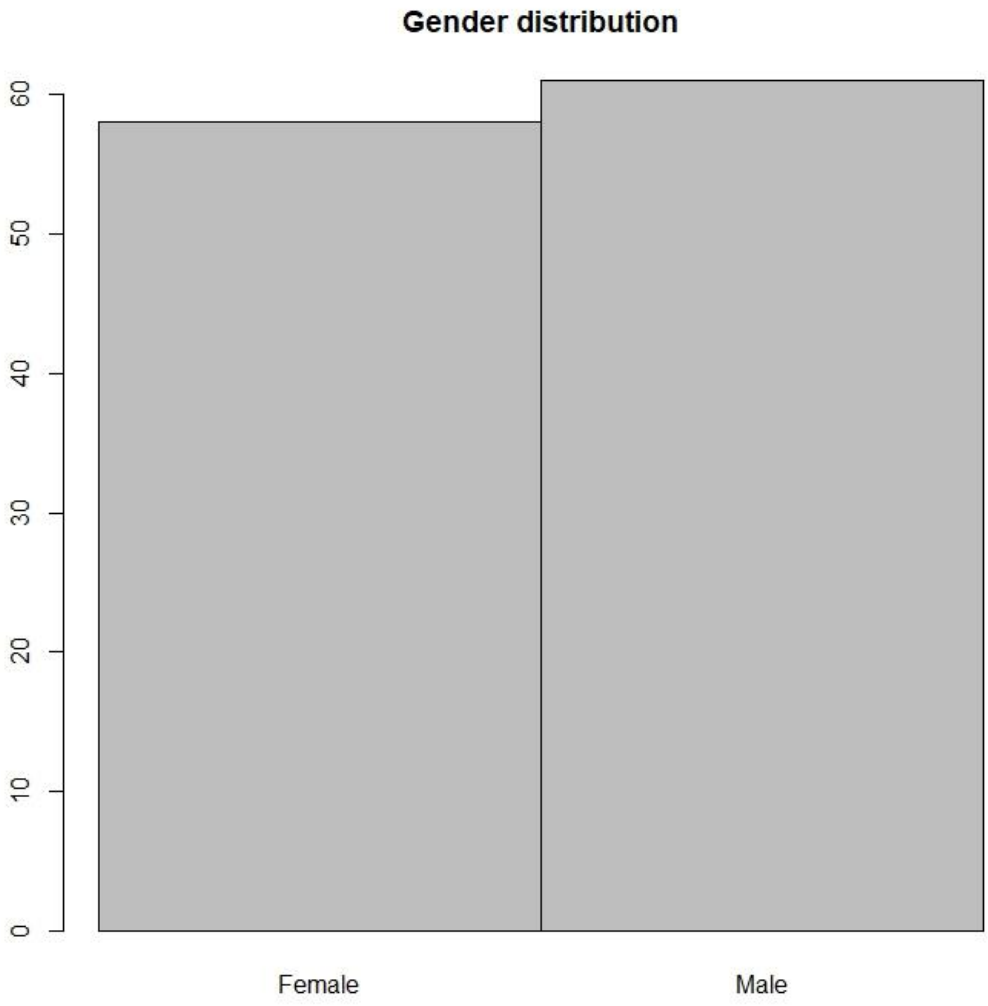


The summary of descriptive statistics for the 119 respondents are given below:

1. Income distribution – close to normal income distribution:



2. Gender distribution: 58 female and 61 male respondents answered the survey, which is an almost equal share.

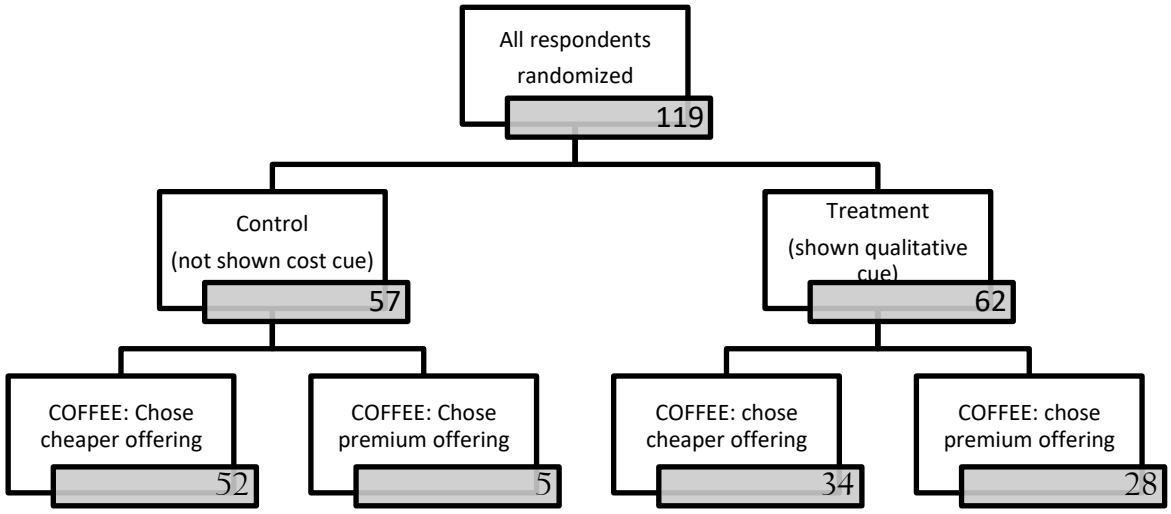


The contingency table below shows the summary of overall results in a 2 x 6 table for the two different survey types, and six questions asked:

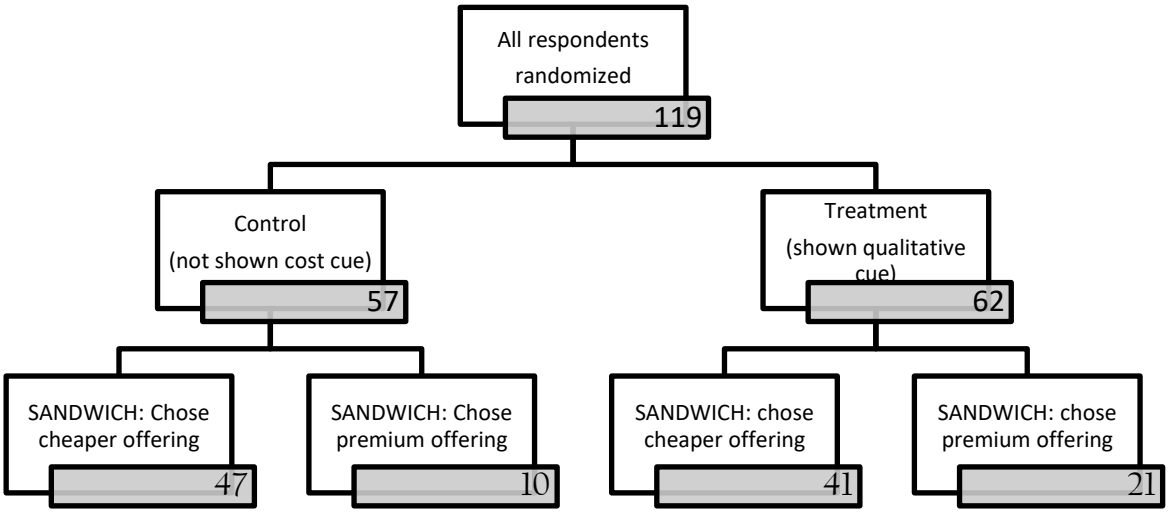
Table 8. Contingency table, experiment 4

	Coffee cheap	Coffee at premium price	Sandwich cheap	Sandwich at premium price	AirTicket cheap	AirTicket at premium price
Survey A	52	5	47	10	47	10
Survey B	34	28	41	21	31	31
Grand Total	**86**	**33**	**88**	**31**	**78**	**41**

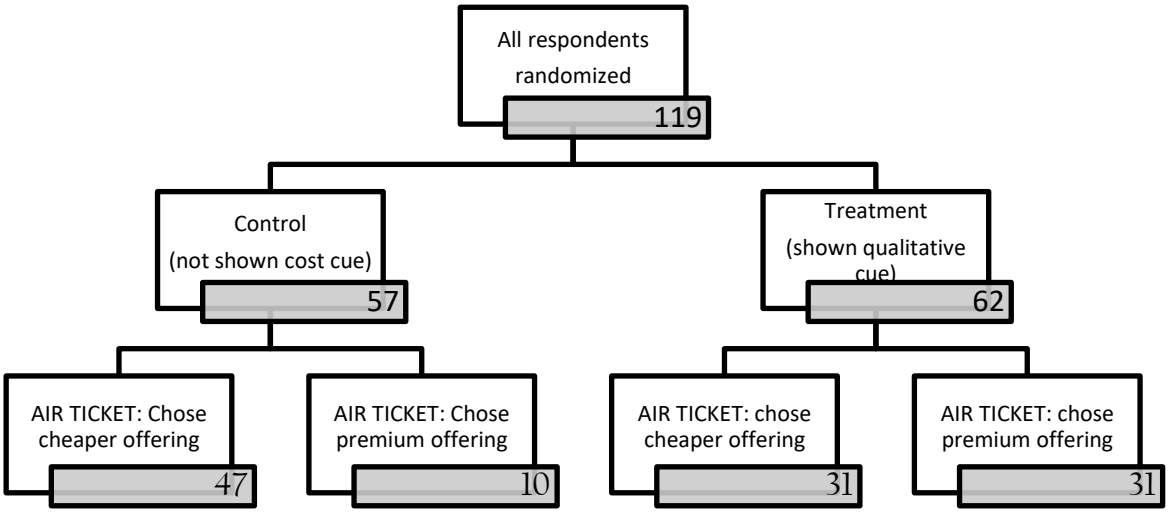
The diagram below shows the design of the study, for offering 1: COFFEE:



The diagram below shows the design of the study, for offering 2: SANDWICH:



The diagram below shows the design of the study, for offering 3: AIRLINE TICKETS:



A round plot of the differences in responses between survey A and survey B is shown below:

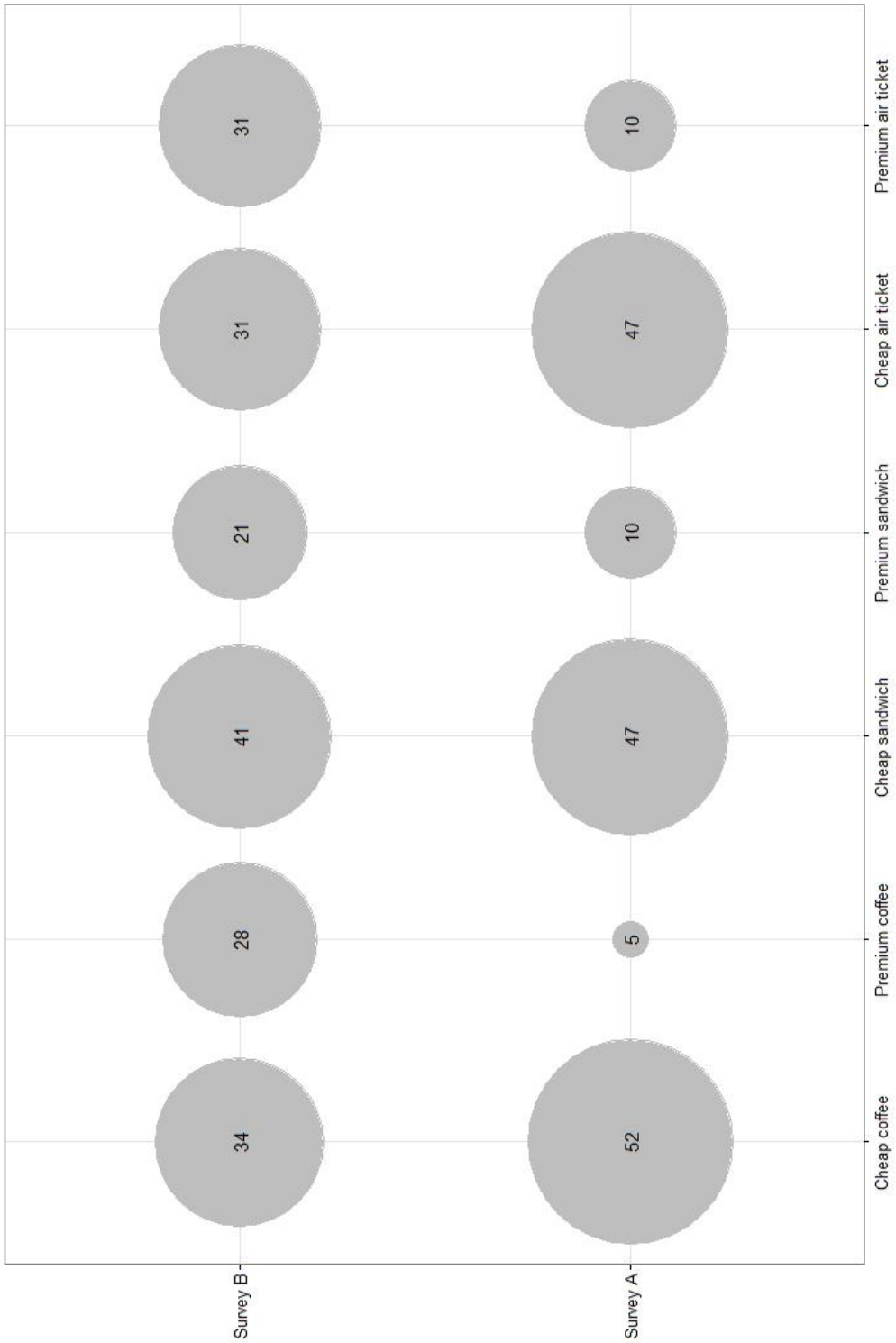


Figure 8. Preference for cheap VS premium offering, by survey type

To test the effect of the additional qualitative cost cues for statistical significance, we run two different sets of tests. First, we run Pearson chi-square test for difference between proportions. Because of the setup in our experiment, we analyze the difference in proportions between the control group (not shown the additional qualitative cost cues) and the treatment group (shown the additional qualitative cost cues). The Null hypothesis is that there is no difference in the two population proportions in how many respondents would choose to purchase the premium products. There are three product categories, so the test is run three times between the two control and treatment groups. If the null hypothesis is rejected in each of these tests, that would mean our hypothesis proposition 4 is confirmed.

Second, as we would like to analyze the effect of two other independent variables (income and gender) on the WTP a premium product, we run a factorial logistic regression. Our dependent variable (DV) is the choice of a premium product (categorical, coded in binary), and our predictor independent variables (IV) are: qualitative costing cue (categorical, coded in binary), income (categorical, 3 intervals) and gender (categorical, coded in binary). Our hypothesis proposition 4 translates to having a positive regression coefficient of significant statistical value in front of the Qualitative costing cue IV, and our hypothesis proposition 5 translates to having a negative regression coefficient of significant statistical value in front of Income IV. Gender is used as a control to check the main effect and is not predicted to have any effect on the DV.

The Chi-square test for difference between proportions.

Our dependent variable is a categorical variable (choose premium or choose cheaper offering) and our independent variables is also categorical (no cue or qualitative cost cue).

The table below summarizes the effect of the pricing cue on the decision to purchase a premium product, for coffee:

Table 9. The effect of qualitative cost cue on purchase of coffee

	Coffee cheap	**Coffee at premium price**	Total respondents
Survey A (control)	52 **(=91%)**	5 **(=9%)**	57
Survey B (treatment)	34 **(=55%)**	28 **(=45%)**	62
Difference in % between control and treatment	**-36%**	**+36%**	

The chi-square statistic is 19.6223. The p-value is 5.088 x e^{-5} , p-value is $<$ 0.00001. The result is significant at $p < 0.05$

We observe that for coffee offering, the pricing cue shown to the treatment group lead to 36% decrease in percentage of participants choosing the cheap, and a 36% increase in percentage of participants choosing the premium offering. The shown pricing qualitative cue has overturned the purchase decision expressed by consumers by over one-third. This is a sizeable effect from a small descriptive label to be placed along with a price. This will be discussed further.

The table below summarizes the effect of the pricing cue on the decision to purchase a premium product, for sandwiches:

Table 10. The effect of qualitative cost cue on purchase of sandwich

	Sandwich cheap	**Sandwich at premium price**	Total respondents
Survey A (control)	47 **(=82%)**	10 **(=18%)**	57
Survey B (treatment)	41 **(=66%)**	21 **(=34%)**	62
Difference in % between control and treatment	**-16%**	**+16%**	

The chi-square statistic is 4.1095. The p-value is 0.042643. The result is significant at $p < .05$.

We observe that for sandwich offering, the pricing cue shown to the treatment group lead to 16% decrease in percentage of participants choosing the cheap, and a 16% increase in percentage of participants choosing the premium offering. The shown pricing qualitative cue has overturned the purchase decision expressed by consumers by over one-sixth, again a considerable effect for a cheap and ethical measure.

The table below summarizes the effect of the pricing cue on the decision to purchase a premium product, for air tickets:

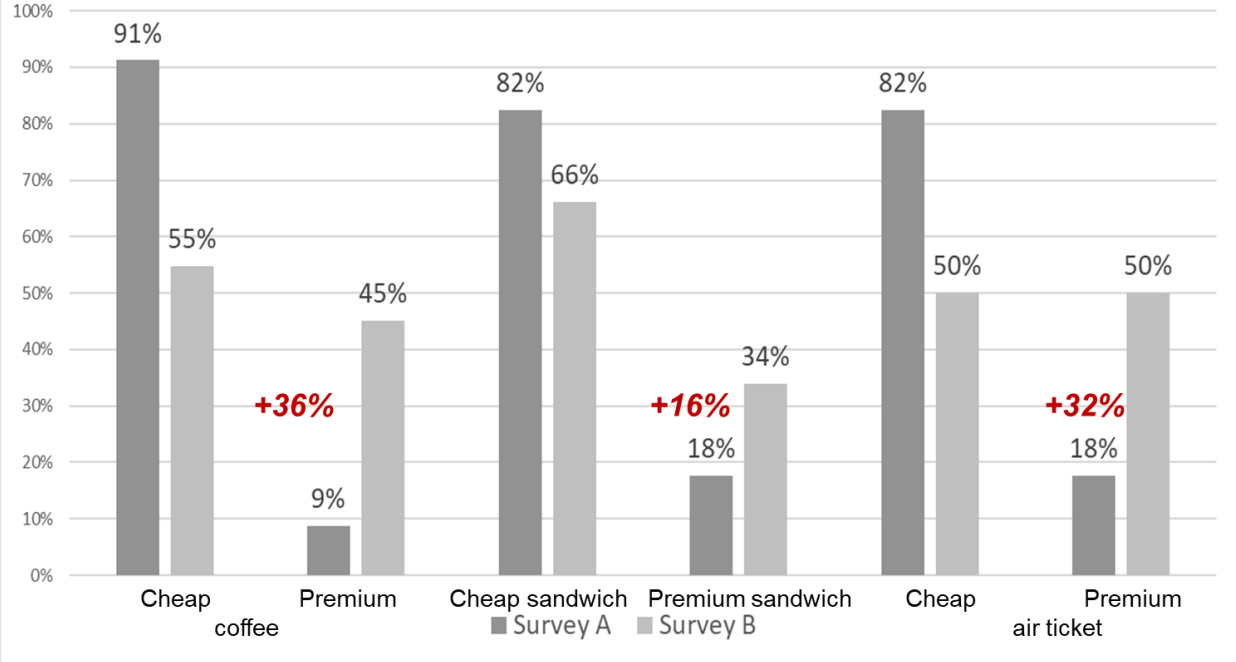
Table 11. The effect of qualitative cost cue on purchase of airline ticket

	Air travel cheap	**Air travel at premium price**	Total respondents
Survey A (control)	47 **(=82%)**	10 **(=18%)**	57
Survey B (treatment)	31 **(=50%)**	31 **(=50%)**	62
Difference in % between control and treatment	**-32%**	**+32%**	

The chi-square statistic is 13.8525. The p-value is 0.000198. The result is significant at $p < 0.05$.

The graph below summarizes the results for all three offerings, and the observed main effect of increase on WTP a premium when cost cues are present:

Figure 9. Effect of qualitative costing cues on WTP a premium



We observe that for airline travel offering, the pricing cue shown to the treatment group lead to 32% decrease in percentage of participants choosing the cheap, and a 32% increase in percentage of participants choosing the premium offering. The shown pricing qualitative cue has changed the purchase decision expressed by consumers by over one-third.

It is important to note that for all three products, our control group still has a percentage of consumers choosing the premium product on offer. What we are comparing is the proportions of the consumer who choose the premium product. The significance of our results is not that some people choose a premium product when cue information was given, but that the cue information made *significantly*

more people choose the premium option *compared* to those that would already choose the premium option without such information being given. This is an advantage in the design of our experiment which contributes to a realistic testing and confirmation of our hypothesis proposition 4.

The proposed effect of revealing qualitative cost information on willingness to purchase at a premium (our proposition 4) is confirmed by a difference in proportions in all three types of offerings. The magnitude of the change in the decision to purchase a premium product ranges between 16% to 36%, and because of the design of the experiment, that would exclude consumers who would always go for the expensive product, even when no cues are present. Our results show that a consumer is five times more likely to choose a premium product than before, if a simple qualitative cost cue is shown. The significant increase in WTP premium is confirmed in all three product categories.

The Factorial Logistic regression.

To evaluate the statistical significance and control for the heterogeneity we captured in our respondent population, we estimated a linear regression model, summarized by the following equation:

Choosing premium product (DV) = β_0 + a. Survey type shown (IV) + b. Gender (IV) + c. Income (IV)

Where **a, b,** and **c** are linear coefficients;

β_0 is a constant

Choosing the premium product is a binomial categorical variable (yes, no). For each test below, this DV is different: for coffee – **Coffee expensive** (0= premium product NOT chosen, 1 = premium product chosen); for sandwich – **Sandwich expensive** (0= premium product NOT chosen, 1 = premium product chosen); for Air line ticket – **Air ticket expensive** (0= premium product NOT chosen, 1 = premium product chosen);

Survey type shown is a binomial categorical variable (Type A=no qualitative cost cues, Type B=qualitative cost cues shown).

Income is a categorical variable with three ordered intervals (below the average, about the average, above the average).

Gender is a binomial categorical variable (male = 0, female = 1).

Table 12 below shows the correlation matrix of the variables.

Table 12. Correlation matrix for the effect of qualitative cost cue on WTP premium

	1	*2*	*3*	*4*	*5*	*6*
1. Survey type	1					
2. Coffee expensive	0.406***	1				
3. Sandwich expensive	0.186*	0.488***	1			
4. AirTicket Expensive	0.341***	0.341***	0.255*	1		
5. Income	0.072	-0.019	0.098	-0.028	1	
6. Gender	-0.277*	-0.078	-0.119	-0.106	0.027	1

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

The matrix suggests there is a strong collinearity between the survey type and the choice of a premium product in all product categories, and low to moderate collinearity between the control variables (Income, Gender).

We ran the linear model for the three different offerings (coffee, sandwich, airline ticket)and results are shown below:

1. Regression model results for choosing premium coffee

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.099	0.092	1.071	0.287
Income	-0.033	0.057	-0.584	0.560
Gender	0.035	0.079	0.445	0.657
Survey type	0.377	0.080	4.737	0.000***
R squared	0.17			
N	119			

***p < 0.001, **p < 0.01, *p < 0.05

The regression tests our hypothesis propositions 4 and 5 in a different statistical test from the Chi-square correlation. The results show that customers who are shown the qualitative cost cues (survey type B) are significantly more likely to choose the premium priced coffee offering, our hypothesis 4 is supported. Income is shown to be negatively correlated to choosing the premium product. That supports our hypothesis proposition 5, in that higher income segments of respondents would see less change in the number of consumers choosing premium product with the qualitative cost cue shown, compared to choosing the premium product in general, without additional cues. That coefficient however is not shown to be significant, so hypothesis proposition 5 is not supported for coffee.

2. Regression model results for choosing premium sandwich

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.161	0.097	1.661	0.099
Income	0.058	0.060	0.971	0.334
Gender	-0.068	0.083	-0.820	0.414
Survey type	0.139	0.084	1.662	0.099
R squared	0.05			
N	119			

***p < 0.001, **p < 0.01, *p < 0.05

The results show that customers who are shown the qualitative cost cues (survey type B) are more likely to choose the premium priced sandwich offering, but this positive correlation is not statistically significant. Experiment with Sandwich offering does not support hypothesis proposition 4.

3. Regression model results for choosing premium airline ticket

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.218	0.101	2.167	0.032*
Income	-0.037	0.062	-0.597	0.551
Gender	-0.009	0.087	-0.103	0.918
Survey type	0.326	0.087	3.747	0.000***
R squared	0.12			
N	119			

***p < 0.001, **p < 0.01, *p < 0.05

The results show that customers who are shown the qualitative cost cues (survey type B) are significantly more likely to choose the premium airline tickets, our hypothesis proposition 4 (Cost disclosure affects willingness to pay price premium) is supported. Income is shown to be negatively correlated to choosing the premium

product. That supports our hypothesis proposition 5, in that higher income segments of respondents would see less change in the number of consumers choosing premium product with the qualitative cost cue shown, compared to choosing the premium product in general, without additional cues. That coefficient however is not shown to be significant, so hypothesis proposition 5 is not supported for air tickets.

Discussion of the results and further analysis

To summarize experiment 4, we have shown that by including qualitative costing cues together with the premium price for an offering, we can increase by five times the consumers willing to pay for a premium-priced coffee. In this discussion, we provide possible explanation for the effect of qualitative costing cues on increased willingness to pay a premium by linking to the theory of persuasion and establishing credibility and transparency with the customer.

Robert Cialdini's persuasion study postulates that when people make decisions, they are influenced by reciprocity, commitment and consistency, social proof, authority, liking, and scarcity (Cialdini, 1984). In convincing consumers to pay a premium, brands like Cartier, Burberry and Montblanc have been shown to use scarcity, created by burning unsold goods. What we propose instead is to apply transparency and credibility principles and thus increase consumers' WTP a premium

in an ethical way, disclosing the costs that make the offering more expensive in the first place. The push for more disclosure of information is a global phenomenon. It started after the Global Financial crisis of 2007-2008[17], and has been championed by Auditing and Banking regulators and professionals. CPA Australia is one example of this, with their initiative to encourage Integrated reporting:

> "Accounting professionals worldwide have started a movement towards Integrated reporting (IR). CPA Australia defines IR's aim to be of improving "the quality of information available to providers of financial capital to enable a more efficient and productive allocation of capital, and in summary, to promote a more cohesive and efficient approach to corporate reporting, enhance accountability and stewardship, support integrated thinking that focuses on the creation of value over the short, medium and long term. Whilst overtly targeted at providers of financial capital, it is viewed as potentially beneficial to all stakeholders interested in an organisation's ability to create value over time." (CPA Australia, 2018)

Our proposed disclosure of qualitative cost information next to a price in order to justify its premium, could be called 'Integrated reporting in Marketing', or IRM. The aim is to provide information to consumers to make an informed choice between offerings by disclosing qualitatively the elements that make a premium product more expensive; disclosing qualitatively the investments that the producer has had to make. IRC Framework was only announced in 2013, and 2014-2017 was the initial 'break-through' phase of its implementation. It would be interesting to compare and evaluate the implementation of

[17] The crisis started in the subprime mortgage market in the United States and developed into major international banking crisis with the collapse of the investment bank Lehman Brothers. Excessive risk-taking by banks and predatory lending ultimately lead to a global economic downturn, and various legal measures have been taken to ensure discipline and reporting are more stringent so as to avoid a recurrence in the future.

an ‘IRM’ - integrated reporting in marketing - and the ideas we propose about disclosure of qualitative cues to effectively and ethically convince customers to pay a price premium, rather than by burning products to create scarcity.

-

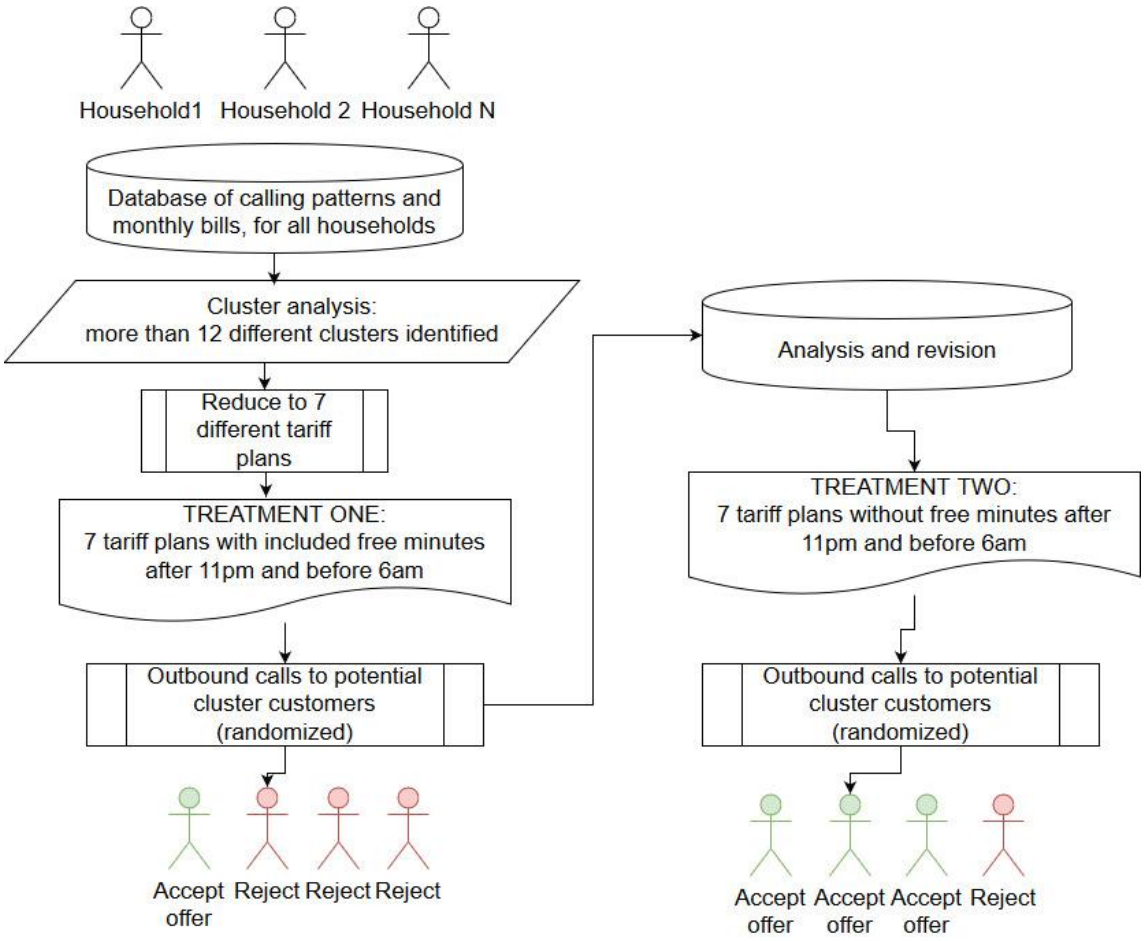
Experiment 5: Cluster analysis

Participants

The study was carried out in Indonesia together with an industry partner, a telecommunications company providing telephony services. Households which have had a fixed phone connection for at least two years were the selection pool for this study. The selection process then excluded the households which paid below IDR5,000 (approx. USD0.50) in monthly bills for their fixed phone, and those without any incoming or outgoing call minutes (without any usage) on their phone in the last 6 months. The reasoning behind narrowing the population of the study in this manner was to avoid non-active users and potential non-users of the service being part of the study. Since the focus of the study was the acceptance of a new phone bundle offer, non-users would not be in a position to evaluate and make a purchase decision, and may in fact already not be using the service at all.

The sample was also selected to include all geographical regions and islands in Indonesia, resulting in a total list of 3,072,206 participating households.

The diagram below represents the procedure followed in experiment 5:



Procedures

After identification of the participants, analysis of the outgoing calling patterns was undertaken using cluster analysis in SPSS Data modeling tool. K-means cluster analysis was applied, with no categorical variables used in the model. The variables used for the multivariate method of clustering customers and identifying the number of different groups with similar customer calling patterns were the following:

- Number of calling minutes within the city (local calls), for the past six months, monthly values.
- Number of calling minutes to other cities (inter-cities calls), for the past six months, monthly values.
- Number of calling minutes to international destinations (international calls), for the past six months, monthly values.
- Number of calling minutes to mobile phones locally (local mobile calls), for the past six months, monthly values.
- Number of calling minutes to mobile phones internationally (international mobile calls), for the past six months, monthly values.
- Number of calling minutes by time of the day, for all the categories above, for the past six months, monthly values.

More than 12 distinct clusters of customers were identified, and the next procedure was to design differentiated pricing plans for each of the customer segments identified. After consulting with the industry partner (the Indonesian telecommunications provider), the number of segments and price plans was limited to seven.

The seven price plans were designed to address different affordability and spending levels, starting at IDR65,000 (approx. USD4.88), and reaching up to IDR1,500,000 (approx. USD112.51) in monthly fees. The pricing packages (or bundles, in industry terms) included a different amount of free minutes to call to each of the destinations: local calls (within the city), between cities (inter-city), and at different times of the day.

Outbound calls were then made using a pre-prepared script, by the call center agents of the Indonesian telecommunications company, to offer these plans in a targeted way to customers within the spending bracket of each price plan. The calling lists were randomized between seven different geographic regions, which corresponded to the regional sales divisions used by the industry partner. The lists were also distributed to 1,220 different calling agents. The lists of customers were randomized within different towns without each state of Indonesia, different street addresses, and different starting dates for the subscribers' telephone services, and to different calling agents.

No other communication was done about the new price plans above the line (using any advertisement channels). Only personalized selling over the phone was implemented. After three months of offering the seven price plans, the number of minutes included in the price plans was changed, without altering any prices. In particular, the price plans' free minutes of inter-city calling in the night time, 9pm to 5am were either removed or halved, and the prices were kept the same. The same outbound calling agents then carried out the second wave of the market experiment, calling selected households identified in the initial analysis of the segments, and offering the new revised seven price plans, at the same price levels. The lists were again randomized using the same criteria. Households who participated in the first wave of calling were excluded from the second wave of calling.

The groups of customers who were called in the first wave of outbound calls and the second wave of outbound calls were very similar, and the only difference

between the two waves of calling was the inclusion of some extra free minutes in the first wave of calling. The criteria for selecting the customers in both waves of calling was the same, and the randomization and different demographic characteristics were the same in both waves of calling. The treatment and control groups which we later compare in their take-up rates were similar in every dimension other than the minutes included in the packages they were offered.

Data collection

Data was collected about the response of households, whether they accepted or rejected the price plan offered, at both times: before and after the revision. Data was also available for the usage patterns of each of the households being contacted in the experiment. Data was also available in detail about the monthly bill for the fixed phone paid by each household for a period of up to 5 years before the experiment was conducted.

Data analysis

Quantitative analysis of the market experiment data was undertaken, a comparison of the take-up rates for the offered pricing plans, before and after the change in the number of minutes included. Data was collected and analyzed at the individual household level. T-test for significance in take-up differences between the two groups was undertaken. Data for monthly bills of the household was used as an indicator (in ranking terms) for income bracket of household earnings.

A single differences comparison method was used. Underlying assumptions are stated, in particular in view of establishing that the control group and the treatment group of customers were similar in all aspects except the offered bundle and price for telephony service.

Robustness checks are run on the data, including different choice of controls, no controls at all, choosing a different start and end times of the sample for the treatment and choosing different size of the control group. It should not be expected that every specification will yield the exact same result, however the checks will inform the reader what drives the statistical power behind our results.

Analysis

THE FIELD EXPERIMENT

The data for this study comes from a field experiment in pricing of fixed telephone services in South-East Asia, in the period between November 2008 and April 2010. The experiment was done in partnership with a telephone service provider. In the classic tradition of pharmaceutical experiments, with placebo and test drug treatments, our experiment had a BEFORE and AFTER treatment results, which will be further explained and compared below.

At the start of the experiment, the price of voice telephony service was a two-part pricing model: a fixed access fee, or 'subscription fee', payable every month regardless of usage of the service, and a fee per usage, for every minute of calling. The usage fee differed according to the call destination: local calls within the same area code were the cheapest, followed by inter-city calls, followed by calls to mobile numbers. Furthermore, while local calls were charged at the same rate regardless of the time of the day, inter-city, mobile and international calls had a differential price according to the time of the day / night. Nighttime prices were cheaper, with a significant discount of up to 75% compared to daytime prices. Nighttime prices applied for calls made between 11pm and 6am any day. This was standard practice of pricing telephony services around the world in the period of the experiment.

If the customer did not use the telephone at all to make calls in a certain month, there would be no usage portion fee, but the subscription fee would still be charged.

The purpose of the pricing field experiment was to design bundle prices for the telephone service: a fixed monthly amount to include both the right to access the service (the subscription part), plus some minutes of calling (the usage part). In industry terms, going from two-part pricing to a single fixed amount is referred to as 'bundling'.

The calling patterns of 7.366 million customers (households) of the company's telephony services were analyzed, together with their overall spending levels (i.e. the monthly bill they paid), to design proper customer segmentation for targeted marketing and product design purposes. Cluster analysis using density function was done on the granular data for usage of the phones, which included overall monthly bill, the minutes of usage to each of the calling destinations, the time of usage during the 24-hour period, and the customer length of use of the service. Seven distinct segments were identified.

For each of these segments, a bundle price was designed, inclusive of three elements: access to the telephony, free local minutes of calling and free inter-city minutes of calling. The customers were not bound by any contract if they took up the offered bundle, and they could go back to paying the two-part pricing any time they wanted. If minutes were not utilized within the month, they were not carried over to the following month; consumption of the minutes of talk included in the bundle had to happen within the month or they would be lost.

As is usual with pricing bundles, they offered a saving compared to the two-part pricing. The following table explains the advantages of the price bundles in the BEFORE scenario:

Table 13. Comparison of the seven bundles BEFORE to two-part pricing

Bundles BEFORE	Price of the bundle (USD)	Free Local minutes	Free inter-city minutes daytime* BEFORE	Free Inter-city minutes nighttime** BEFORE	Value of the free local calls (USD) BEFORE	Value of the free inter-city calls (USD) BEFORE	Total value of the bundle (USD) BEFORE	Savings compared to two-part pricing (in %) BEFORE
bundle 1	5.52	300	100	30	3.11	6.01	11.67	111.3%
bundle 2	8.50	350	300	70	3.63	15.84	22.02	159.1%
bundle 3	12.74	500	500	100	5.18	24.57	32.30	153.5%
bundle 4	21.24	750	500	180	7.77	33.35	43.67	105.6%
bundle 5	33.98	1,000	750	300	10.36	53.32	66.23	94.9%
bundle 6	59.47	2,000	1,000	500	20.73	82.07	105.34	77.1%
bundle 7	127.43	2,400	1,500	1,250	24.87	177.98	205.40	61.2%

*Daytime includes 6am to 11pm.

**Nighttime includes 11pm to 6am.

Note: conversion to USD is based on the weighted average rate of USD spot transactions traded in the interbank market, published by the Indonesia's Central Bank, for the period of the experiment.

As demonstrated by column 9 in table 13, all seven bundles offered significant savings compared to the two-part pricing that all customers were currently on. The savings ranged from 61.2% to 111.3%. It is important to note that majority of the value in the price bundle was captured by the inter-city free minutes. Because of the high per-minute price of inter-city compared to local calls, the monetary value of inter-city minutes included in the bundles was anywhere between 2 times to 7 times higher compared to the value for the local calls included. It is important to recognize this was a salient value feature of the bundles BEFORE.

With the value of buying the bundle versus continuing to pay two-part pricing convincingly demonstrated, the pricing researchers proceeded to offer these bundles to actual customers, together with the industry partner.

The marketing communication was strictly below-the-line, i.e. no direct advertising of the proposed bundles was done (no TV, no brochures, print, radio nor any other public communication). The selling approach was in a controlled experimental setting, by outbound telephone call only, from the telecom's own call center, to a randomized list of customers, selected from the existing 7.336 million customers of the telephony service. There was no other way to get the offering except being called directly by the telecom's own agents and accepting the offering. The conversations were recorded and followed the standard practice of quality and supervisor monitoring inside the telecom operator's own call center. [18]

[18] The call center operators have two levels of supervisor monitoring which includes real-time listening of selected on-going calls, and daily and weekly reviews. All calls were recorded.

The list of customers to be called and offered the price bundle was selectively randomized. The seven bundles were offered to customers who were roughly within similar spending bracket as the overall price of the bundle; within each spending bracket the selection was random. The table below summarizes the logic for the selective random sampling:

Table 14. Randomized offering to consumer segments

Customers randomly called with the offer		Offered bundle
Min average spend per month	Max overall spend per month	
4.25	8.07	**bundle 1**
8.07	11.89	**bundle 2**
11.89	19.11	**bundle 3**
19.11	29.73	**bundle 4**
29.73	42.48	**bundle 5**
42.48	84.95	**bundle 6**
84.95	254.86	**bundle 7**

By February 2009, four months into the experimental sales campaign, only 7,485 bundles were sold. The industry partner was concerned about the success of the experiment, so the researchers undertook a qualitative study (study 6 in Table 4) of respondents to help determine the reason why consumers were not buying the bundle, despite the obvious value it provided.

THE TREATMENT 'AFTER'

For the next phase of the study, the research team redesigned the pricing bundles. The prices for the seven bundles were kept the same, the included free local minutes were kept the same, the included minutes inter-city during the day time were kept the same. However, for the cheapest three bundles (1, 2 and 3), the inter-city minutes during nighttime were removed. For the remaining four bundles

(4, 5, 6 and 7), the number of minutes nighttime inter-city were decreased by half. This lowered the value of the bundle compared to paying the current two-part tariff. The table below summarizes the revised packages' values (AFTER), which now decreased to between 5.2% and 51.7% of savings compared to the default two-part pricing:

Table 15. Comparison of the seven bundles AFTER to two-part pricing

Bundles AFTER	Price of the bundle (USD)	Free Local minutes	Free inter-city minutes daytime* AFTER	Free Inter-city minutes nighttime** AFTER	Value of the free local calls (USD) AFTER	Value of the free inter-city calls (USD) AFTER	Total value of the bundle (USD) AFTER	Savings compared to two-part pricing (in %) AFTER
bundle 1	5.52	300	100	-	3.11	2.72	8.38	51.7%
bundle 2	8.50	350	300	-	3.63	8.16	14.33	68.7%
bundle 3	12.74	500	500	-	5.18	13.59	21.32	67.3%
bundle 4	21.24	750	500	90	7.77	23.47	33.79	59.1%
bundle 5	33.98	1,000	750	150	10.36	36.85	49.77	46.5%
bundle 6	59.47	2,000	1,000	250	20.73	54.63	77.90	31.0%
bundle 7	127.43	2,400	1,500	600	24.87	106.63	134.06	5.2%

As evident from table 15, there was a significant decrease in the value of the AFTER bundles. For example, bundle 1: from 111.3% savings BEFORE, to 51.7% savings AFTER, and for bundle 2: from 159.1% savings BEFORE, to 68.7% savings AFTER.

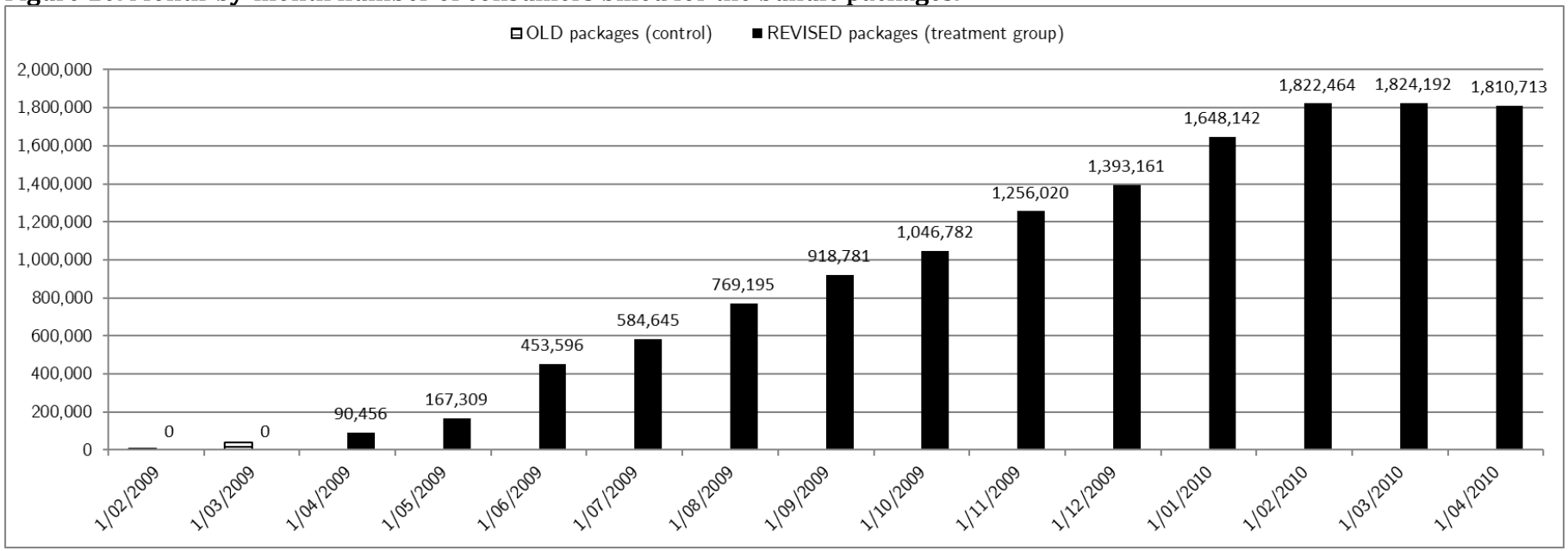
The experiment continued with the partner making the offers using the controlled experimental setting, with outbound calls from the telecom's own call center agents directly to a randomized list of households. The same call agents were doing the marketing in both BEFORE and AFTER instances. Even if there was learning accumulated so far, the agents now had a selling task which was *twice* as difficult, since the value offered to customers was significantly decreased, and the price remained unchanged.

It is important to note that during the experiment period, there was no other new pricing offer by the telecom company to fixed telephony customers, and there was virtually no competitor on the market for fixed telephony. There were no calls to mobile included in the free minutes so there was no spill-over effect from the growing mobile telephony services in the country happening at the same time. If anything, the exuberant growth of mobile phone services being offered was pulling customers away from the fixed phone service altogether, a trend which continued to grow over the whole next decade. The original two-tiered pricing scheme (usage fee plus subscription fee) was also still available to customers to switch back to anytime, and the revised seven bundles were still offered without any contractual obligation.

The original 'BEFORE' bundles were never offered again. Customers had been offered only one type of bundle at the time of contact, and they could either take it or leave it.

For the next four months after the change, which started in April 2009, sales of the 'AFTER' bundles surpassed one million (customers taking up the AFTER bundles totaled 1,007,200 by the end of October 2009). The graph below shows the total number of customers every month who were billed for the bundle offers. It is important to note that for each month, some customers chose to leave the program as well, as there was no contractual obligation.

Figure 10. Month-by-month number of consumers billed for the bundle packages.



By April 2010, customers lost interest in the program, as more customers decided to leave the bundle pricing scheme than new customers decided to take it, so the industry partner and the researchers stopped the experiment.

ANALYSIS

To prove our theory propositions 1 and 2, we tested how the treatment in the experiment, i.e. the removal of the inter-city minutes in nighttime, affected customers' willingness to buy the service. The first test we ran was **a two-tailed z-test of significance** between two population proportions: the BEFORE and AFTER. The populations are independent and the sample size allows for this test. The two population sizes (N1=217,407; N2=2,854,779) and the two proportions (P1=39,581; P2=1,771,132) clearly indicated there is a statistically significant difference ($p=0.00$, $z=-400.5014$ at $\alpha=0.01$) between the two populations which cannot be due to chance. The treatment was the removal of perceived waste from the bundle of calling minutes – minutes which were hard to use as they involved calling someone in another city after 11pm in the night. During the experiment, everything else remained unchanged except for the number of minutes of inter-city calling during nighttime, so this was the main factor causing the difference in purchasing behaviour.

To test proposition 3 about the moderating effect of income, the next tests we ran were based on the Marascuilo procedure which allows multiple comparisons between population proportions. Marascuilo procedure is a test which allows simultaneous testing of the differences of all pairs of proportions, and can be applied when there are several populations under investigation. Based on all

possible combinations of pair-wise comparisons, the procedure calculates the critical values for rejecting the null hypothesis, using the formula described below.

Formula 6. Marascuillo procedure

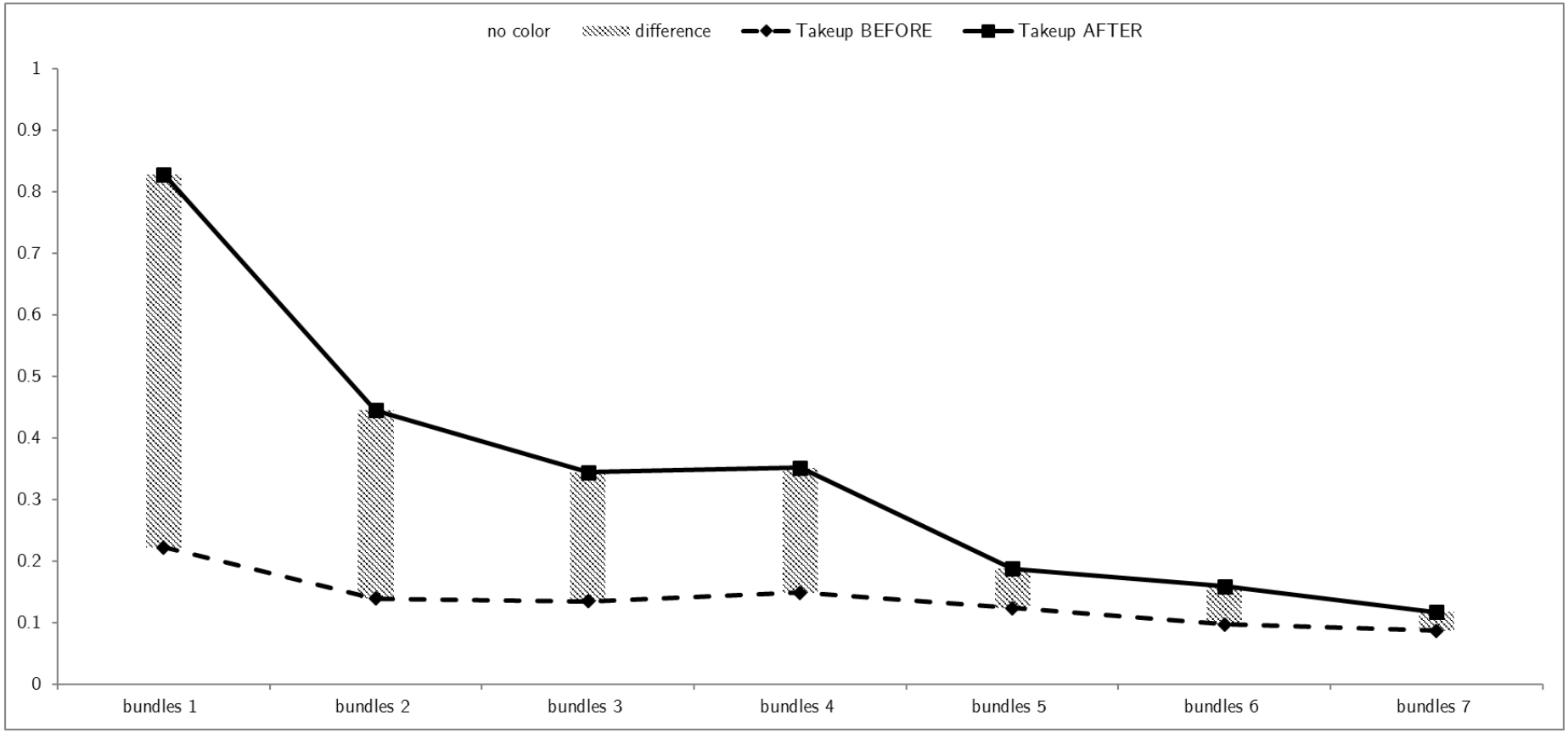
Marascuillo procedure for sample size n_i (i=1,2,…,k) from k populations, where the absolute differences $p_i - p_j$, (where $i \neq j$) among all $\frac{k\,(k-1)}{2}$ pairs of proportions, are used to calculate the corresponding critical value as follows:

$$r_{ij} = \sqrt{\chi^2_{1-\alpha,k-1}} \sqrt{\frac{p_i(1-p_i)}{n_i} + \frac{p_j(1-p_j)}{n_j}}$$

Significance would be at level α.

We were interested in the differences between the response rates to the different bundles being offered, as well as between the same bundle, but BEFORE and AFTER the treatment (the removal of nighttime inter-city minutes). The figure below is a good visual illustration for the difference in takeup rates as a proportion (response rates) of BEFORE and AFTER bundles:

Figure 11. Comparison of takeup rates (in percentage) of consumers in BEFORE versus AFTER case, by the different seven bundles



As evident from the graph, the take-up for AFTER (uninterrupted line) is higher than for BEFORE (dashed line), but also significantly more so towards the cheaper bundles (the shaded area of difference). Visually, these differences appear significant, so the next tests were to determine the statistical significance of these results.

We ran three series of tests: Marascuilllo procedure within the BEFORE bundles, within the AFTER bundles, and between the BEFORE and AFTER of the same bundle. Our dependent variable was the takeup rate, shown on Figure 11. Comparison of takeup rates (in percentage) of consumers in BEFORE versus AFTER case, by the different seven bundles on the Y axis as a decimal fraction. It is defined as the proportion of customers who bought the offered bundle, out of all customers who had been called with the same bundle offer. The null hypothesis on all these tests was that there is no difference between the takeup rates, and any observed absolute value difference was due to chance.

The results of the first Marascuillo procedure tests within BEFORE bundles are summarized below:

Pair-wise comparisons within **BEFORE** bundles (degrees of freedom = 6, α=0.05, $\chi 2$=12.59159 for two-tailed)

The population proportions we are comparing are the following:

Table 16. Population proportions BEFORE

p1	0.222144
p2	0.138765
p3	0.134699
p4	0.148316
p5	0.123379
p6	0.097216
p7	0.086651

Where **p**N is the Nth bundle proportion takeup (e.g. **p1** refers to the proportion of customers who took up the offered bundle 1 BEFORE, out of the total called

customers to be offered bundle 1; **p2** refers to the proportion of customers who took up the offered bundle 2 BEFORE, out of the total called customers to be offered bundle 2, and so on.)

At the chosen level of significance of 0.05, the $\chi 2$ is 12.59159, and the square root of that is 3.548462659. Plugging these values in the Formula 6, we then calculate the critical value for each pair-wise comparison of proportions, and compare it to the critical value to test significance. This is shown in column 3 in the table below:

Table 17. Pair-wise comparisons of significance, bundles BEFORE

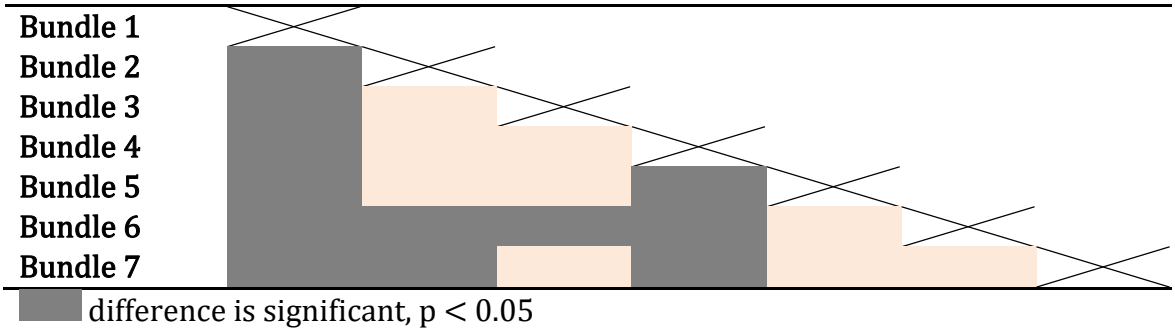
Tests BEFORE	Value	Critical range	Significant?
[p1-p2]	0.08338	0.006772	yes
[p1-p3]	0.087445	0.00862	yes
[p1-p4]	0.073829	0.01287	yes
[p1-p5]	0.098766	0.01548	yes
[p1-p6]	0.124928	0.02218	yes
[p1-p7]	0.135493	0.04850	yes
[p2-p3]	0.004066	0.00908	no
[p2-p4]	0.009551	0.01318	no
[p2-p5]	0.015386	0.01574	no
[p2-p6]	0.041548	0.02237	yes
[p2-p7]	0.052114	0.04859	yes
[p3-p4]	0.013617	0.01422	no
[p3-p5]	0.01132	0.01662	no
[p3-p6]	0.037483	0.02299	yes
[p3-p7]	0.048048	0.04888	no
[p4-p5]	0.024937	0.01917	yes
[p4-p6]	0.051099	0.02490	yes
[p4-p7]	0.061665	0.04981	yes
[p5-p6]	0.026162	0.02635	no
[p5-p7]	0.036728	0.05054	no
[p6-p7]	0.010565	0.05298	no

Next, the calculated critical value for each pairwise comparison is compared to the absolute of the difference between the two proportions compared in each step. Column 2, 'Value' in the table above, shows the absolute of those differences in proportions. A difference is statistically significant if the value (column 2) exceeds the critical range value (column 3). In Column 4, the result of that comparison is shown, in terms of whether the difference between the two proportions we compare is statistically significant or not.

For easy visualization of the results of the significance testing the table below shows another view:

Table 18. Visualization of the results of the significance testing in bundles BEFORE

Bundles BEFORE	Bundle 1	Bundle 2	Bundle 3	Bundle 4	Bundle 5	Bundle 6	Bundle 7



The results indicate that not all bundles in the BEFORE scenario were statistically different from each other in terms of how they were perceived by customers, and subsequently affected the customers' decision to buy them. We observe that bundles 5, 6, and 7, despite having very different value propositions of 94.9%, 77.1% and 61.2% savings respectively, were not very different in how successful they were selling to customers. This has interesting implications for designing value of services: a value of 94.9% savings results in a similar take-up proportion as a value of 61.2% savings, which has profitability implications for the firm. In other words, designing the price to maximize profitability should explore value propositions which do not leave wasteful value: customers seem to feel convinced to buy the package at 61.2% value. This could be a line of further research in the future for service offering design. It is worthwhile to note that the comparison value for bundle 5 was very close to the critical range and close to the cut-off for being significantly different in take-up from all other bundles, which was not the case for bundles 6 and 7.

It is also important to note that the take-up rate of bundle 1 was statistically significantly different from any other bundle in the BEFORE scenario. We will later examine the jump in take-up rate in the AFTER treatment of bundle 1, which was the most significant jump among all groups.

The next table 19 shows the Marascuillo procedure ran within the AFTER bundles:

Pair-wise comparisons within **AFTER** bundles (degrees of freedom = 6, α=0.05, χ2=12.59159 for two-tailed)

Table 19. Population proportions AFTER

p1	0.827924208
p2	0.444823629
p3	0.344050771
p4	0.351345652
p5	0.187004617
p6	0.158598643
p7	0.116523911

Table 20. Pair-wise comparisons of significance, bundles AFTER

Tests AFTER	Value	Critical range	Significant?
[p1-p2]	0.383101	0.002332	yes
[p1-p3]	0.483873	0.00306	yes
[p1-p4]	0.476579	0.00462	yes
[p1-p5]	0.64092	0.00498	yes
[p1-p6]	0.669326	0.00748	yes
[p1-p7]	0.7114	0.01525	yes
[p2-p3]	0.100773	0.00353	yes
[p2-p4]	0.093478	0.00494	yes
[p2-p5]	0.257819	0.00528	yes
[p2-p6]	0.286225	0.00769	yes
[p2-p7]	0.3283	0.01535	yes
[p3-p4]	0.007295	0.00532	yes
[p3-p5]	0.157046	0.00564	yes
[p3-p6]	0.185452	0.00794	yes
[p3-p7]	0.227527	0.01548	yes
[p4-p5]	0.164341	0.00662	yes
[p4-p6]	0.192747	0.00866	yes
[p4-p7]	0.234822	0.01586	yes
[p5-p6]	0.028406	0.00886	yes
[p5-p7]	0.070481	0.01597	yes
[p6-p7]	0.042075	0.01692	yes

All bundles in the AFTER scenario received significantly different responses among the customer segments. The implications are that the value propositions in the revised bundles were calculated better: perceived waste was eliminated. The remaining value offered in AFTER packages was distinctly different and captured well into price differentiation. This also improves the firm's profitability compared to the BEFORE scenario, according to the basic principles of differential pricing from economics (Varian, 1995, 1996 and 1989).

Lastly, the results of the Marascuillo procedure between bundles is shown in table 21:

(degrees of freedom = 6, α=0.05, $\chi 2$=12.59159 for two-tailed)

Table 21. Pair-wise comparison of bundles BEFORE and AFTER

Pairs	Test	Value	Critical range	Significant?
Bundle 1 BEFORE and AFTER	[p1-p2]	0.6057799	0.0044743	yes
Bundle 2 BEFORE and AFTER	[p3-p4]	0.3060590	0.0055929	yes
Bundle 3 BEFORE and AFTER	[p5-p6]	0.2093518	0.0079779	yes
Bundle 4 BEFORE and AFTER	[p7-p8]	0.2030300	0.0129216	yes
Bundle 5 BEFORE and AFTER	[p9-p10]	0.0636259	0.0156342	yes
Bundle 6 BEFORE and AFTER	[p11-p12]	0.0613824	0.0229802	yes
Bundle 7 BEFORE and AFTER	[p13-p14]	0.0298729	0.0349365	no

There are significant differences in the takeup rates of the 7 bundles of the before and after treatment (the exception is bundle 7, the highest prices one, which is still very close to the critical value for statistical difference, 0.03 compared to the critical value of 0.029). This means the null hypothesis can be rejected and the differences in the takeup rates of the revised bundles compared to the initial ones are not due to chance.

The results of the Marascuillo procedure on the difference between bundles BEFORE and AFTER support our second proposition: there is a factor affecting that difference, and our hypothesis is that this factor was perceived waste. The only element that was changed between BEFORE and AFTER, was the exclusion of extra minutes in the nighttime; all prices and other inclusions stayed the same. The wasted nighttime minutes is what had a repellent effect on customers BEFORE the treatment. Once perceived waste is removed, the service sells significantly better even at exactly the same price. Our theory is that because the extra nighttime minutes were the only thing changed, the significant differences observed must be caused by the removal of the extra minutes.

The scale of the upward change in takeup shown in Figure 11 visually differs significantly between the seven bundles. This change in magnitude is what supports our third theory proposition: given that the monthly spending on the phone for a historic period of over 12 months is a proxy for income levels, customers on lower income brackets are more affected by the repellent effect of waste, compared to those on higher income brackets. There is less tolerance for perceived waste in lower affordability constraints. Whereas customers with higher incomes would be more willing to buy offerings with value which might not be used; premium products can contain options which you never use. In lower income brackets, the goal is to pay and use any service you buy completely; any perceived waste would reduce the customer's willingness to pay for the service. Therefore, the observed effect of removing the waste from the service AFTER is much stronger in the lowest income bracket segments.

Looking at the p-values in the pairwise comparison, the significant differences of BEFORE and AFTER are clear in all bundles except bundle 7, the highest priced one. However, the p-value gets closer to the critical value as the bundle prices get higher, so effectively there is a clear one-directional relationship between the price of the bundle and the REW, which turns customers away. With bundle 7, offered to the most affluent customer segment, waste is acceptable. If income level passes a certain threshold, tolerance for waste increases. Customers are not turned off by unused utility, which relates to concepts of conspicuous consumption, prestige and indulgence (Rao and Schaefer, 2013).

Randomization and experiment size as a control

In analyzing the experiment results, it is important to note that heterogeneity controls were not employed. However, randomization and the experiment sheer size

of sample (over 3 million respondents) are used in lieu of traditional statistical control. In randomization, the groups that receive different experimental treatments are determined randomly. While this does not ensure that there are no differences *between* the groups, it ensures that the differences are distributed equally, thus correcting for systematic errors. For example, in our experiment we had two groups, who were treated by variations of the calling plans, with or without free minutes between 11pm and 6am. The experiment was controlled by assigning the treatments to randomly selected groups of households between different bill payment quantums, different Indonesian islands, different customer longevity of service, and different towns. This mitigates the effect of variations in the heterogeneity characteristics of the consumers.

There was strictly no repetition between consumers called in the BEFORE and AFTER experiment stages, so the two samples were independent. If a consumer household had been called in the BEFORE packages offer, they dropped off the automatic calling system, and their response was recorded as 'take' or 'reject' the offer. They were not called again in the AFTER campaign. This makes the experiment a clear between subjects type design with two independent randomized samples.

As in every field experiment, there are other factors which are outside the environment of the treatment and control group, which could be raised as issues affecting the observed result. One other possible issue is the experience effect by call center agents, as they carried out more calls. We used 1,200 outbound calling agents to execute the campaign, and different staff were working on different days and shift, in a manner randomized against their skill. There were at any given time 540 calling stations dedicated to the experiment, across six different call centers located on the different islands and island groups in Indonesia: Java, Sumatra, Bali and lesser Sunda

islands, Kalimantan, Sulawesi and the Moluccas island group, with the calling agents all part of the industry partner's wholly owned call centers. The scale of the team of outbound callers, and the randomization ensures that any differences between the groups of BEFORE and AFTER calling agents, are distributed equally, and do not pose systematic errors in the results.

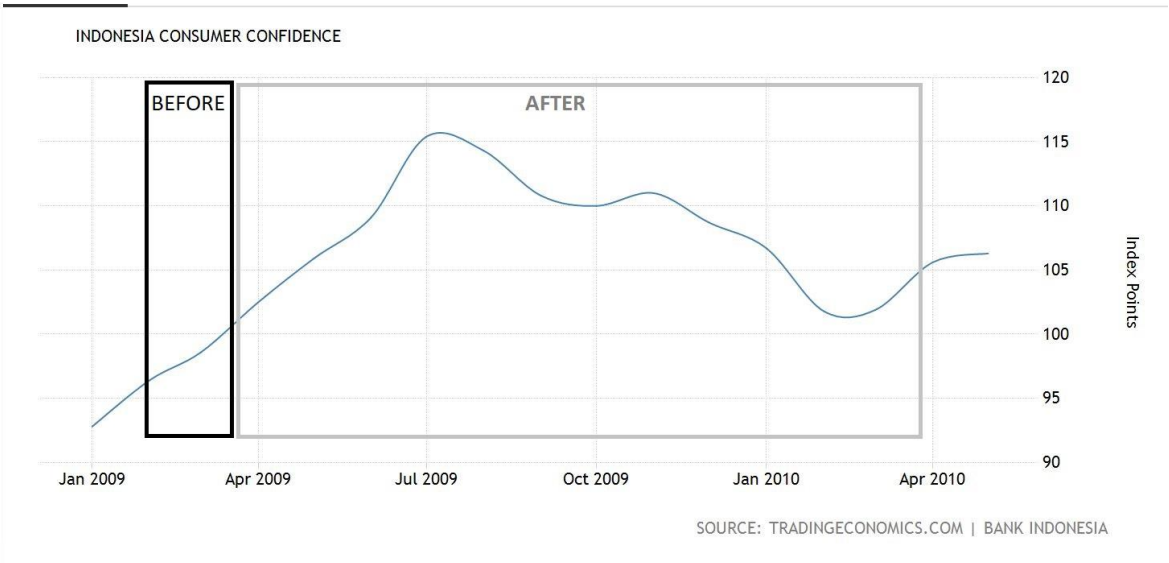
Environment as a control

The field experiment took place over several months, and so one possible objection to our observed result is that somehow a change in the environment could be responsible for the uplift we observed in the AFTER offering, compared to the BEFORE. We already described that the competitive horizon was non-existent (there was virtually no other fixed home telephone provider), there was no additional marketing or communication of any of the offers above the line, and no competitor offering. Next, we look at the economic environment in the country to counter other possible considerations, such as a general uplift in the economy or consumer outlook which could have caused the uplift in takeup in the AFTER offers.

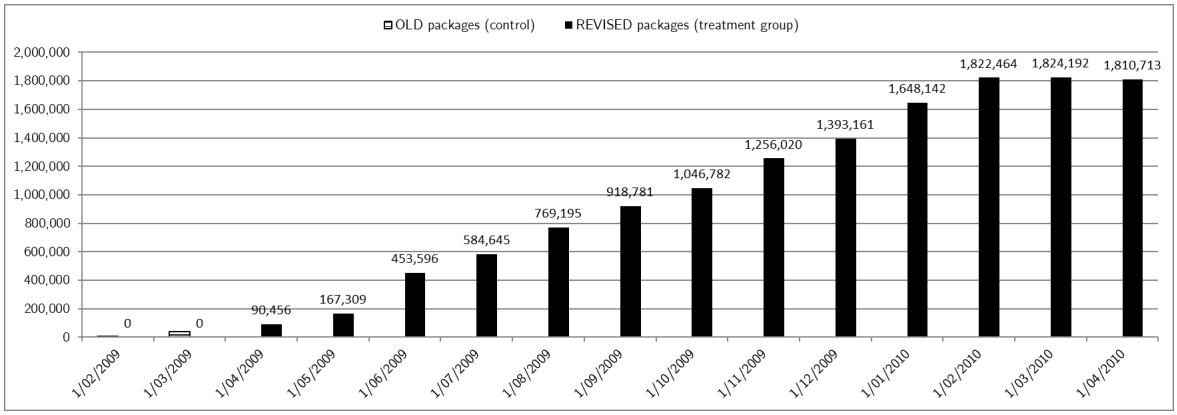
We first look at consumer confidence index, as monitored by the Bank of Indonesia, for the period of the experiment between February 2009 and April 2010. Research has shown that the confidence of consumers in the economy is important for making forward purchasing decisions, such as committing to buy a phone plan which will effectively be consumed only in the next month's period (Ludvigson, 2004).

The Consumer Confidence measured in Indonesia during the period of the experiment is shown on the graph below (source: Bank of Indonesia data):

Figure 12. Consumer confidence measured by Bank of Indonesia; overlay of the time periods of experiment 6 treatments of 'BEFORE and 'AFTER'.

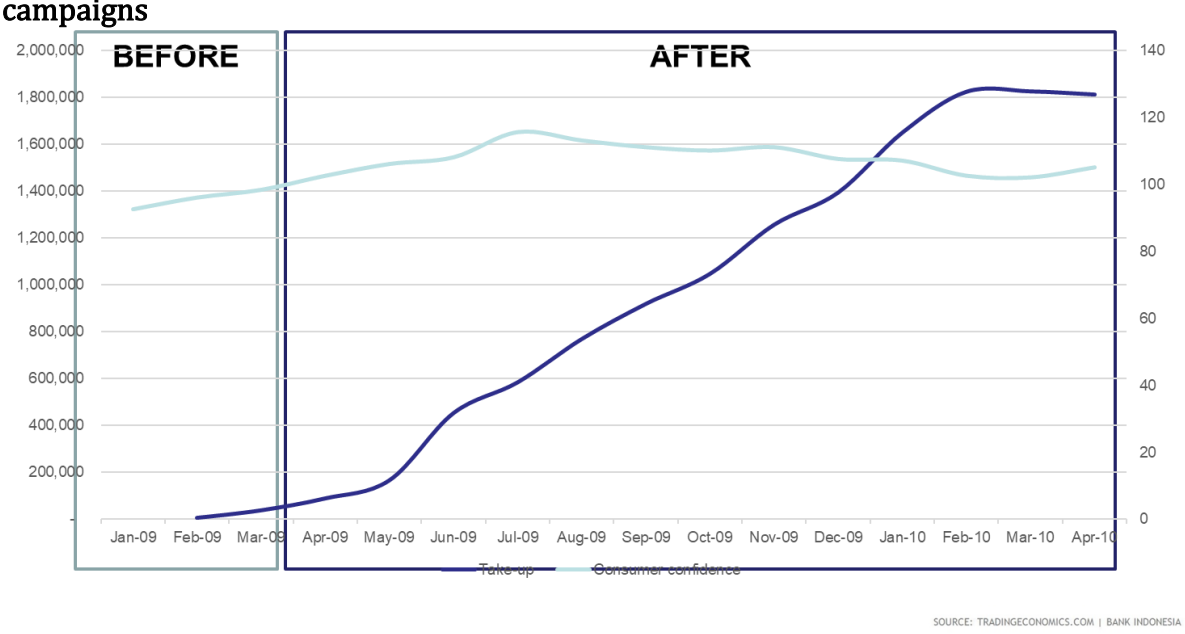


For ease of comparison, below we again show the monthly takeup of our phone offering in the different months:



The graph below overlays the Consumer confidence interval (light line, in percentage points) against the number of customers who have signed up for the offers (dark line, in thousands of customers), for both BEFORE and AFTER:

Figure 13. Consumer confidence compared to takeup during BEFORE and AFTER campaigns

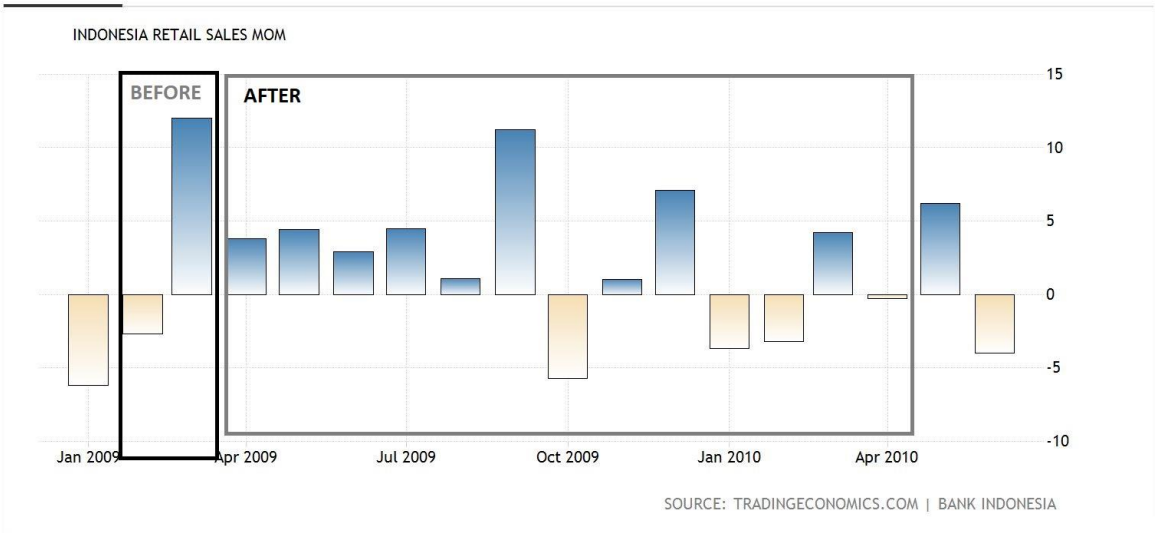


In the period of BEFORE offering, the consumer confidence index experienced a growth of 7.3% (from 96 points in Feb 2009, to 103 points in April 2009). However, in that time we observed that very few consumers took up our offer. Overall, the consumer confidence does not vary more than 10 percentage points up and down within the period of the experiment, whereas the observed increasing trend in takeup shows significant variations.

In the period of AFTER offering, the consumer confidence index experienced two drops (in October 2009 and in February 2010), but these are not observed in the amount of people who were billed on that package in those months. The ending value of consumer confidence of 106 points is almost the same as the start of the AFTER offering, in April 2009, of 103 points. Therefore, consumer confidence, as a measure of the environment, does not seem to affect the consumer decision to purchase more in AFTER offering than in the BEFORE.

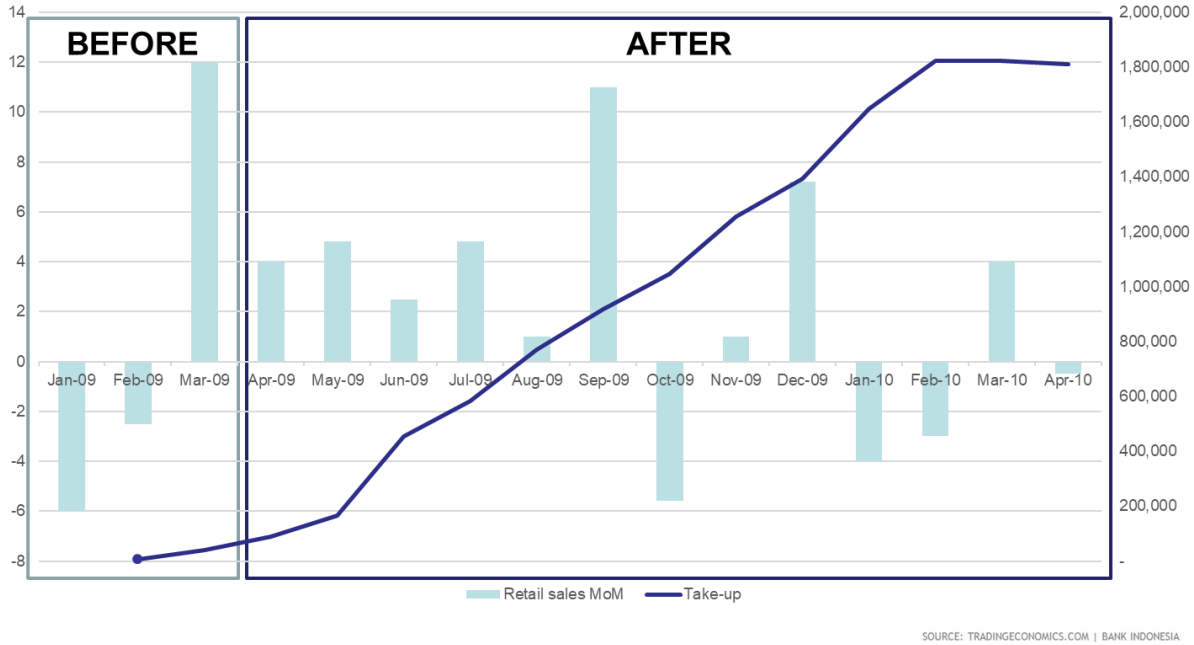
We did the same analysis with Indonesia retail sales, per month, tracked by the Bank of Indonesia, and found no correlation to the uplift in takeup we observed in our AFTER packages:

Figure 14. Retail sales per month in Indonesia, 2009-2010



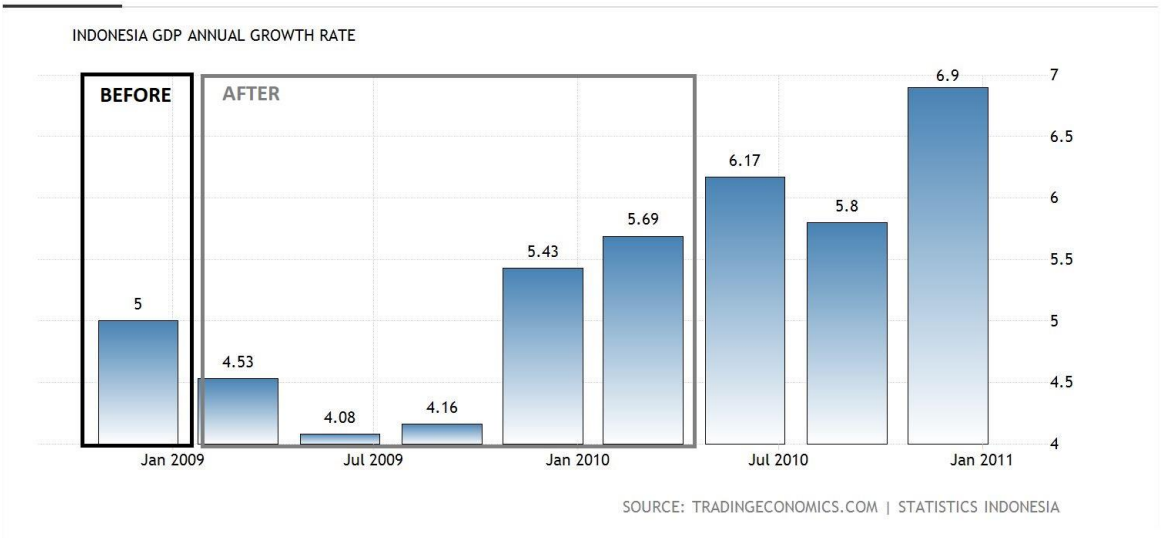
Graph 10 shows the Retail sales MoM (light color bars, in % change from previous month) overlayed with the number of customers billed on the telephone packages (dark line), both BEFORE and AFTER:

Figure 15. Retail sales compared to takeup during BEFORE and AFTER campaigns



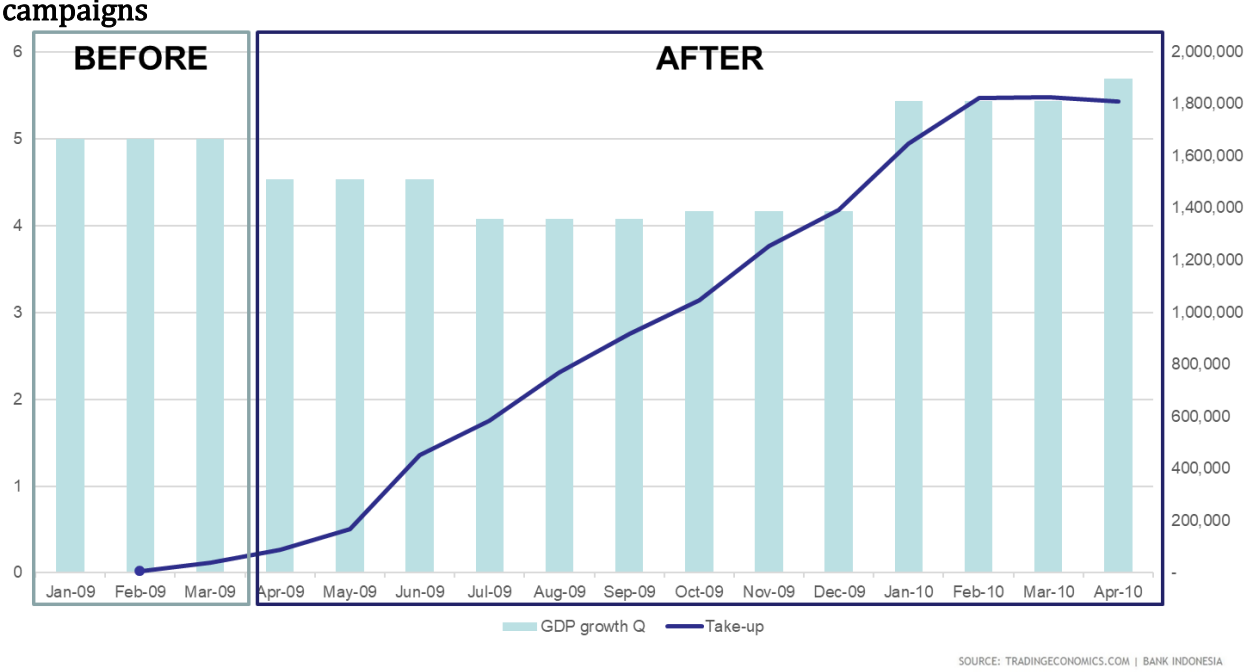
The GDP annual growth rate is the next environmental factor we analyzed. The figure below shows the quarterly recorded GDP growth rate in Indonesia by the Bank of Indonesia:

Figure 16. GDP growth, by quarter, Indonesia 2009-2010



The graph below shows the overlay of the GDP growth rate by quarter (light color bars, in %) overlayed with the number of customers billed on the packages every month (dark line), both in BEFORE and AFTER scenarios. Once again, there is no correlation of the experimental shift we have seen in the BEFORE and AFTER experiments with the changes in the GDP growth of the country:

Figure 17. GDP growth per quarter compared to takeup during BEFORE and AFTER campaigns



Overall, there is no evidence to suggest that an economic uplift or consumer confidence uplift in the AFTER period of our experiment could explain the change in consumer purchasing of the phone offering that we observed.

Sensitivity testing for the main effect

One of the key challenges in running real-life field experiments is the level of control which can be exercised on other factors affecting the main observed effect of the experiment. In addition to the above environmental control testing, we also carried out sensitivity testing by checking only the initial first month offerings of the BEFORE and AFTER campaigns, in an effort to evaluate whether the main effect observed was sensitive to timing of the proposal, and factors such as learning experienced by the calling agents as they go into more months of offering the same packages, and learning possibly experienced by households by cross-contamination, despite the single-channel, below-the-line offering of the packages and strict control of information access and dissemination within the market.

By comparing only the first month of offering of the BEFORE packages, to the first month of offering of the AFTER packages, we eliminate those unwanted possible influences on the outcome and test the sensitivity of our main effect – the removal of extra value from the package – by checking whether the main effect would still hold true. Namely, would our propositions 1 and 2 that customers do not want to buy a bundle of products or services if they perceive they will not derive the full value from all of its included elements, and that customers are happy to still pay an equal price and get the product without the extra 'waste' would hold true if the campaign only lasted one month for each of the BEFORE and AFTER packages.

To test this, we need to compare population proportions of two independent populations – the BEFORE and AFTER campaigns. The variable we are interested to evaluate is the agreement to take up the proposed calling bundle for the household ('take-up' rate). Our Null hypothesis is that there is no difference between the takeup of the packages BEFORE, and the packages AFTER, in their respective very first months of offering. The appropriate statistical test is the z-score test which measures whether the two populations or groups (BEFORE and AFTER) differ significantly on a single categorical characteristic (taking up the proposed phone calling bundle), which in the BEFORE scenario includes more value than in the AFTER scenario. The experiment data satisfies the requirements for the statistical z-score test in the following way:

- A random sample of each of the population groups is compared. The randomization during the calling is across all the bundles in the offering (seven bundles), and across geographic location (all Indonesian islands) and all calling agents.
- Categorial data. The take-up of the offer is a Yes/No variable.

The table below represents the data only for the first months of the BEFORE and AFTER campaigns:

Table 22. Extract of the first month's data of BEFORE and AFTER campaigns

	Month and year	Number of customers billed on the offer in the given month	Net new number of customers for the month (the difference to the billed customers of the previous month)	Total number of calls made in the month*
BEFORE campaign	February 2009	7,485	7,485	235,636
AFTER campaign	April 2009	90,456	76,853	400,582

*NOTE: the 'Total number of calls made in the month' is calculated based on proxy data about the number of calling agent seats allocated to the campaign, which was constant across the campaign, and the KPIs for the duration of one call, the number of calls to be made per day, and the working days of the campaign every month.

For the BEFORE population sample in the first month of campaign, we have sample size: $N_1 = 235{,}636$, and the take-up number, or the number of favorable cases where the household accepted the offered calling package, is $X_1 = 7{,}485$. The sample proportion is $\hat{p}_1 = \frac{X_1}{N_1} = \frac{7485}{235636} = 0.0318$.

For the AFTER population sample in the first month of campaign, we have sample size: $N_2 = 400{,}582$, and the take-up number, or the number of favorable cases where the household accepted the offered calling package, is $X_2 = 76{,}853$. The sample proportion is $\hat{p}_2 = \frac{X_2}{N_2} = \frac{76853}{400582} = 0.1919$.

The pooled proportion is:

$$\bar{p} = \frac{X_1 + X_2}{N_1 + N_2} = \frac{7485 + 76853}{235636 + 400582} = 0.1326$$

We use significance level α=0.05. Our null hypothesis is that the same takeup is observed in the first months of the BEFORE and AFTER campaigns:

$$H_0: p_1 = p_2$$

The alternative hypothesis, based on our theory proposition 2, is that consumers would avoid perceived waste in the service offerings, and the extra value in minutes included in the BEFORE package will end up repelling customers. Therefore, we predict the takeup in AFTER will be higher than in the BEFORE, due to the repellent effect of wasted minutes in the nighttime which cannot be utilized. Mathematically:

$$H_0: p_1 < p_2$$

This corresponds to a left-tailed test, for which a z-test for two population proportions needs to be conducted. The critical value for a left-tailed Z-test is $Z_C = -1.64$. So the rejection interval for the left-tailed test is R={z:z<−1.64}.

Next, the test z-statistic is computed:

$$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\bar{p}\,(1 - \bar{p})}} = \frac{0.0318 - 0.1919}{\sqrt{0.1326(1 - 0.1326)(\frac{1}{235636} + \frac{1}{400582})}} = -181.842$$

This value is less than the control value of -1.64, therefore the null hypothesis is rejected.

The p-value is 0, and it is also less than the significance level of 0.05 and therefore we can confidently reject the null hypothesis.

The evidence from the sensitivity test of only the first months of the two campaigns, BEFORE and AFTER, is enough to claim that the population proportion BEFORE is significantly less than the proportion AFTER; consumers agreed to take up the package a lot more when the unused, perceived to be wasted minutes, were removed from the offering.

This test demonstrates that the main effect of our experiment holds true even if we take only the initial month of each campaign offering, thus withstanding sensitivity to factors such as the level of learning of calling agents or the possibility of cross-contamination among consumers.

LIMITATIONS

While the large scale of our field experiment (more than 3 million respondents) warrants statistical significance to any testing and eliminates many concerns about endogeneity and selection, there were some limitations from the data available to researchers due to privacy and company governance. Researchers did not have any additional data available on respondents, such as demographics. As a respondent was actually a household, such information would have been difficult to universalize: there are many different users of the phone service in a household. In further tests for repellent effect of waste, additional personal moderating characteristics will be explored. In this experiment, we were limited in running further tests to explore secondary effects in the observed population.

A second limitation which follows from the lack of additional data was the consideration of the price of the bundle as a proxy for household income. The reason for this axiomatic assumption is the way target customers in each segment were selected: 12 to 18 months history of the phone bill was analyzed, with the goal to place the consumer in a certain spending bracket. The length of use of the phone service, the history of consistent spending levels on the bills and the differences between the monthly bills provided sufficient evidence to place consumers in certain affordability bands.

A third limitation was the lack of certain parameters on a monthly basis, such as the exact number of consumers called within a given monthly period for each bundle. The total calling target lists were calculated by researchers at the start of the project, and they were available by geographic region (seven regions), and by bundle package (7 BEFORE bundles, and 7 AFTER bundles). The lists were then provided to 1,220 calling agents within the partner organization. The resulting takeup rates were

available by bundles, for the seven BEFORE, and seven AFTER bundles, and by month, for the number of consumers billed for the bundle offers within each month. Such limitation in the access to data are not uncommon when dealing with sensitive information such as individual customer profiles.

Lastly, researchers considered the Bass diffusion model as a predictor and explanation of the increase in adoption of the new bundle pricing for phone service. Some may argue that the speed and timing of adoption depends on the degree of innovativeness of consumers, rather than on the manipulation which we did to the value included in the bundles. However, our qualitative survey evidence suggested otherwise. In addition, this pricing innovation was not a new service by itself; majority of the respondents had been using the phone service for more than 20 years. The offering was also done in a way that consumers could not freely buy the bundles on the market; they could not walk into a shop and order the bundle. They had to wait for a call. As such, there is little evidence to suggest that early adopters would have any influence on the resulting take-up rate which we observed.

Lastly, we were aware of how time might affect the results of our experiment. The calling of customers BEFORE ran from December to February, and the calling of customers AFTER ran from April to the next April. Different months and seasons might affect the results we were observing. Religious holidays and various observances in Asia do affect the consumption and purchasing behavior of consumers. We did run a monthly seasonality test, although with 15 observed values for the months, it did not show any significance nor indicated seasonality observed. We acknowledge the limitation of not being able to run the experiment over enough seasons so as to resolutely remove seasons' effect on the results. However, we

observed increased takeup in AFTER bundles despite the progression of different months and seasons. The modeling done on *only* the first months of the BEFORE and AFTER campaign confirmed our hypothesis and they are isolated from the effect of time and seasons.

Experiment / Study 6: Interviews

Participants

The study was carried out in Indonesia together with an industry partner. Households which had participated in study 1 and had refused to take up the offered pricing plan were selected for the semi-structured qualitative interviews. A non-representative sample of households was selected from different islands of the Indonesian archipelago. The participant size was 209 households, and all had previously refused the offered bundle. Semi-structured phone interviews were conducted together with a partnering sociological survey agency. The list was randomized between different islands and different cities in the Indonesian archipelago.

Procedures

The selected 209 households were contacted after-office hours to make sure that a chief decision maker in the house was reached. The outbound calls were the method for these qualitative interviews, and the interview had semi-structure, with the main goal to find out the reason why the household had refused to take up the proposed price plan, as per the description in experiment 5. The question for the interviews was: “Why had the household refused to take up the proposed plan?” Free text explanations were gathered and coded by the external agency partner.

Data collection

Data was collected about the response of households, based on the questions about the main reason why the proposed pricing plan (BEFORE) was not taken up.

Data analysis

Qualitative analysis of the collected interview data was undertaken, in particular,to elicit common reasons why pricing plans were rejected. Data was collected and analyzed at the individual household level. Responses were transcribed and coded with regards to the underlying factor, affecting the 'NO' purchase decision. Findings were then summarized and given below in table 23. Illustrative quotes are provided for each of the underlying factors. Transcripts are available upon request from the third party partner.

Findings

The interviews revealed something interesting: respondents focused a lot on only one component of the bundles BEFORE: the free inter-city minutes at night, after 11pm and before 6am. Respondents indicated that during the night hours they rarely have anyone to call inter-city, and would end up not using these minutes. Despite having a clear advantage of taking up the bundle even with using only the local free minutes and the subscription portions, customers' responses indicated that they do not wish to pay for something they would not use. Table 23 includes summary statements which were collected during the qualitative explorative study.

Table 23. Summary of results from qualitative study, experiment/ study 6

Underlying factors affecting NO purchase decision	Sample statements from customers
Timing restriction	"The [inter-city] offer is only applicable OFF Peak"
	"This is a gimmick from the telecom"

	"We have nobody to call after 11pm"
Use what you pay for	"We do not want to pay more if we only use below the limits of the package."
	"We need to call GSM [mobile phones] and not the inter-city phones. Your package does not include calling to GSM"

The analysis of the qualitative study supported the formulation of our theory proposition 1. In their decision-making process and the mental accounting (Thaler, 1999) which goes on for consumers to decide whether to buy a product or not, customers focused on only one element of the bundle: the inter-city minutes. This element was the salient feature and carried most of the value saving, as it was the most expensive call under the current two-part tariff that consumers were using. The most expensive feature was understandably the most obvious one, the salient feature. When consumers are faced with too much choice and need to decide on the spot, they look for heuristics, and one of them is the salient feature. This could help a consumer quickly make a judgment, over the course of a phone call, whether to buy an offer or not. Support for this idea is found in consumer psychology and decision making research. Literature discusses a theory of evaluability, whereby the most salient feature and the easiest to evaluate takes precedence over all else in decision making. Further details can be found in the discussion section of the paper.

Analysis

Based on the analysis of the study results, the arguments and underlying concepts for the repellent effect of waste theory were summarized. The proposed repellent effect of waste was confirmed qualitatively, and the propositions were re-formulated and re-affirmed.

Discussions

Qualitative study 6 helped to solidify our theory propositions 1 and 2: there exists a perception of waste in services, and perceived waste in services repels customers. When we enquired about the reason for the decision not to purchase a bundle BEFORE, we heard over and over the explanation about the late time zone of the nighttime minutes, and the inability to use the minutes that you were offered in that bundle. This was true across all segments. There was evidently a perception of wasted value which dominated the decision making process of for the purchase of a perishable service. In contrast to previous theory findings (Bolton and Alba, 2012), there was clearly a feeling that a perishable service, such as air time or talk time, is wasted if not unused, even though there is nothing physically going to the waste bin. Consumers felt reluctant to buy a bundle and not use it, and gave us this as the reason for not buying the bundle BEFORE, even though the rest of the minutes within the city and inter-city in the daytime they could use. Waste is perceived in services as well as in physical goods, and affects the decision to purchase or not purchase.

The second identified theme which emerged from the analysis of responses, namely the desire to use everything that they buy, offered crucial support for our theorized proposition 2, the fact that waste ends up repelling customers. The consumers' arguments explained the 'how' and linked together our theory. In answering the question, why not take the offered bundle BEFORE, consumers pointed out that they run on family budgets, that they calculate what they spend for and specifically want to make sure that they use what they buy. Any wasteful purchase is undesirable, as money could be assigned to another part of the budget and utilized and consumed.

With experiment 5 and study 6, we confirmed our theory on the existence of perception of waste in services, and its repellent effect on consumer purchase

behavior. Bolton and Alba had observed six years before our experiment, that students in the US university preferred to spend money on duplicate services, rather than duplicate products, and so built a theory that waste is tolerable for non-tangible products. In our theory, we propose the opposing view, that services do suffer from over-offering perception, from the effect of waste included in the offer to the point that consumers choose not to buy despite the obvious savings. So how can the two findings be explained and reconciled?

Our proposed explanation lies in the differences between products and services, and the relative pricing between them. As economies develop, real prices of consumer goods fall worldwide (Womack and Jones, 2005). There is also well document Penn-effect in economic theory: prices of GDP relative to the exchange rate increase with income per capita. This is attributed to services being cheaper relative to goods in poorer countries (Inklaar and Timmer, 2014), while the opposite happens in more affluent countries. Services become more expensive as the labour costs increase in more developed economies. The relative prices between products and services is our proposed explanation for why the tolerance for waste in services has now changed and consumers are sensitive to the perception of waste in the services they purchase.

Based on our experiments, we propose that waste in services is no longer tolerable. The culture of mass consumption and mass substitution of product for exchange of service (such as buying a new gadget versus repairing the old one) have switched Bolton and Alba's propositions around. As modern consumers throw away cars, phones, toys and clothes and buy new ones rather than pay for repair, this is a signal that products and services have now switched places. Consumers are now willing to duplicate purchases, throw-and-replace, and tolerate an increased amount

of waste in physical goods they buy, but not willing to pay for extra services if they are not going to use them fully.

CHAPTER 4: Important implications from the current research

The theory of the repellent effect of waste poses an interesting framework which links to several areas of scientific research: in economic policy, consumer psychology, decision making and personality, as well as in pricing. We will now examine these links and expand further our theoretical contribution.

One of the major new contributions to theory of the proposed repellent effect of waste is its application to services. An important sector which deserves special attention due to its increasing impact, both socially and for industries, is telecommunications. In 2015, the United Nations published a review of the achievement of its Millennium developmental goals, and the new aims to be achieved by 2030 by all its member countries. Together with ending poverty and hunger, education and peace goals, it also included a target of getting 60% of the world population to access broadband internet by the year 2020 (Force, 2015). In its report, the UN task force identified affordability as still being one of the major issues preventing access to internet, in particular for developing countries, lagging a long way behind the target level:

> "Though affordability has progressed significantly in recent decades, greater efforts must be undertaken, especially in the economies that most need ICTs but which are least able to access them…Several countries have already pledged to goals and targets for 2020 that are more inclusive, sustainable and innovative regarding ICTs and will bring us closer to a truly global information society." (Force, 2015, p.17).

The Broadband Commission for Digital Development identified a specific target for the price of entry-level broadband internet to meet the affordability, and it was set as "less than 5 per cent of average monthly income" (Force, 2015, p.86). However,

the market price of accessing broadband internet is still relatively high, especially in the poorest countries of the world. The average entry price in many countries for a broadband connection is set at more than 50 per cent of Gross National Income per capita (GNI) (Force, 2015, p.86). The International Telecommunications Union (ITU) has recommended that "more efforts [be] made to lower prices even further, particularly in countries where services are most needed but remain least affordable." (Force, 2015, p.86).

This disparity between the research recommended price of 5% of GNI per capita, and the market reality of price of 50% of GNI per capita for monthly access to broadband was the first driving motivation for the current research into pricing. The access to broadband is not only a third-world country problem. In Australian parliament, discussions abound about whether a-100Mbps speed connection is needed on the market, as there were very few customers who have bought that service in the first wave of deployment of the government-funded National Broadband Network in Tasmania. The government has committed AUD40 billion to this National Broadband Network, which was 85% of the country's budget in 2013-2014 (Budget, 2015), to fund an industry which is the second most profitable in the world (Chen, 2015).

The question about whether a-100Mbps speed connection is needed should actually be asked the other way around, as it is *the price* which determines demand. The correct question should be: is the price level we designed and put on the market for 100Mbps adequate for the demand? Is what is included as value in that price adequate for the needs of customers? Is there a waste or insufficient attributes of value for customers? Are there enough cues in addition to price so that consumers have the knowledge to make a good purchase decision? Are consumers not

understanding the value a 100-Mbps service can give them, and therefore are reluctant to pay the premium price? What cues about the value of a premium product need to be given to consumers?

The answers to these questions were explored in the present research, and the context of services, a prime example of which is broadband connectivity, is an important area where our findings and theoretical contributions can be applied to great impact.

Given the price gap of more than 10 times between actual broadband pricing and the recommended pricing levels to achieve the UN development goals, the repellent effect of waste and the qualitative cost information affecting WTP could provide an alternative solution. The current study's implication is that optimal design of prices, the value included in products, and the price cues for consumers can help make internet affordable for customers without investing billions into government programs. Not many countries have the budget surplus of Australia to fund government telecoms, while majority of countries have put broadband access at the top of their priorities, with Finland even pioneering it as a right in its constitution.

If internet services are designed with the repellent effect of waste in consideration, infrastructure will be used in an effective way to offer services, and the number of people which can then use the service will expand. The current study' proposition is in fact that the development goals of the UN could be achieved with careful product and price design, more than with unlimited and boundless government spending.

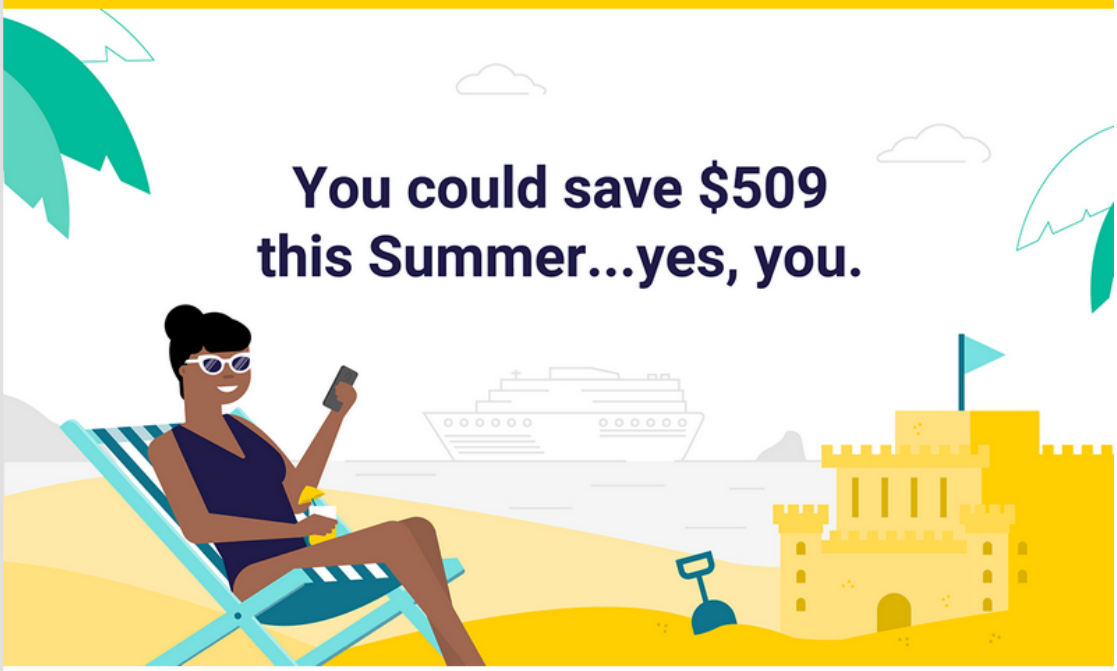
There have been calls to manage marketing with a view of sustainability before, in particular with the recognition of finite resources and high environmental costs (Kotler, 2011). There were calls for a more careful approach to consumption with the

global financial crisis of 2008, as consumers adjust their lifestyles to a lower level of income and spending. There is a theory of lean consumption (Womack and Jones, 2005) which advocates giving the consumers exactly what they want. Womack and Jones found that although instinctively, "'when it comes to consumption, less can't be more', Actually it can be, for both consumer and provider" (p. 11). Lean consumption in the authors' definition is "about providing the full value that consumers desire from their goods and services, with the greatest efficiency and least pain." Less can be more, if engineered correctly and delivered efficiently.

Very recent statements by Telstra's CEO in Australia also seem to focus on the idea of giving consumers only what they will use. In an interview in The Australian Newspaper in July 2018, Telstra CEO Andy Penn said: 'Our customers have told us that they don't want to pay for things that they don't use and therefore in October we will be launching more choice for customers allowing them to add services they value to their base plan." The executive further announced that "the next product move from Telstra would be to allow customers the flexibility to fully customise their home and mobile packages" (Swan and Adhikari, 2018). This is further support for the validity and contemporaneity of our research and reconfirms the proposed REW for services.

An email marketing campaign for an American insurance company, Liberty Mutual Insurance, is also counting on the slogan 'Customize your auto insurance so you only pay for what you need'. Visuals shown below:

Liberty Mutual. INSURANCE



We customize your auto insurance so you only pay for what you need.

Let's get started on your custom quote.

Get a quote

call 1-844-774-4668

Liberty Mutual. INSURANCE

$509 Auto savings figure: Average savings based on countrywide survey of new customers from 8/1/16 to 8/1/17 who reported savings from prior premiums when they switched to Liberty Mutual. Savings comparison does not apply in MA.

Coverage is provided and underwritten by Liberty Mutual Insurance Company and its affiliates. 175 Berkeley Street, Boston, MA 02116 USA. Equal Housing Insurer.

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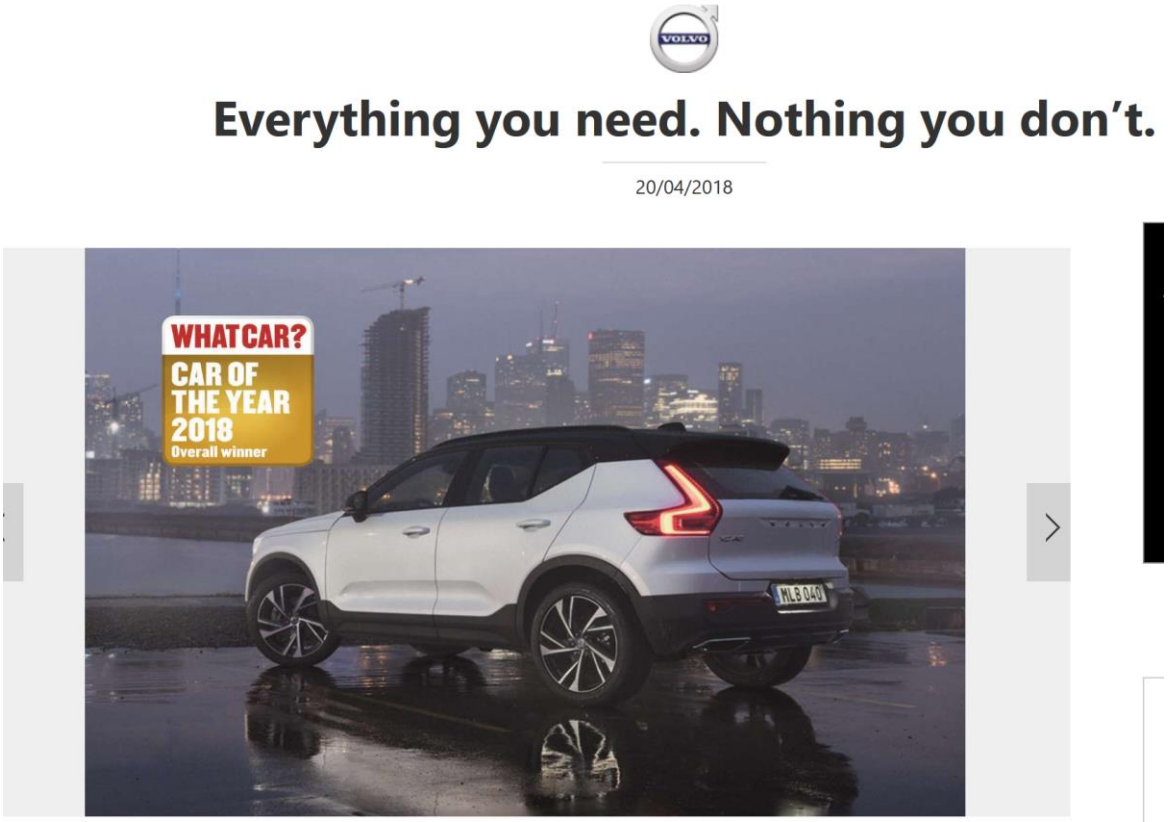
Source: http://code.settle.site/JuzFyyE2JiYm3CstJmkmPXKPiIuYmp9zm5qbh5Im, accessed September 2019.

Additional evidence to support the increasing interest of marketing through a 'waste saving' proposition can be found in the recent Volvo XC40 ad campaign. The new model of the SUV class of the car-maker was launched under the slogan: "Everything you need. Nothing you don't":

Figure 18. Visual from advertisement slogan: everything you need, nothing you don't



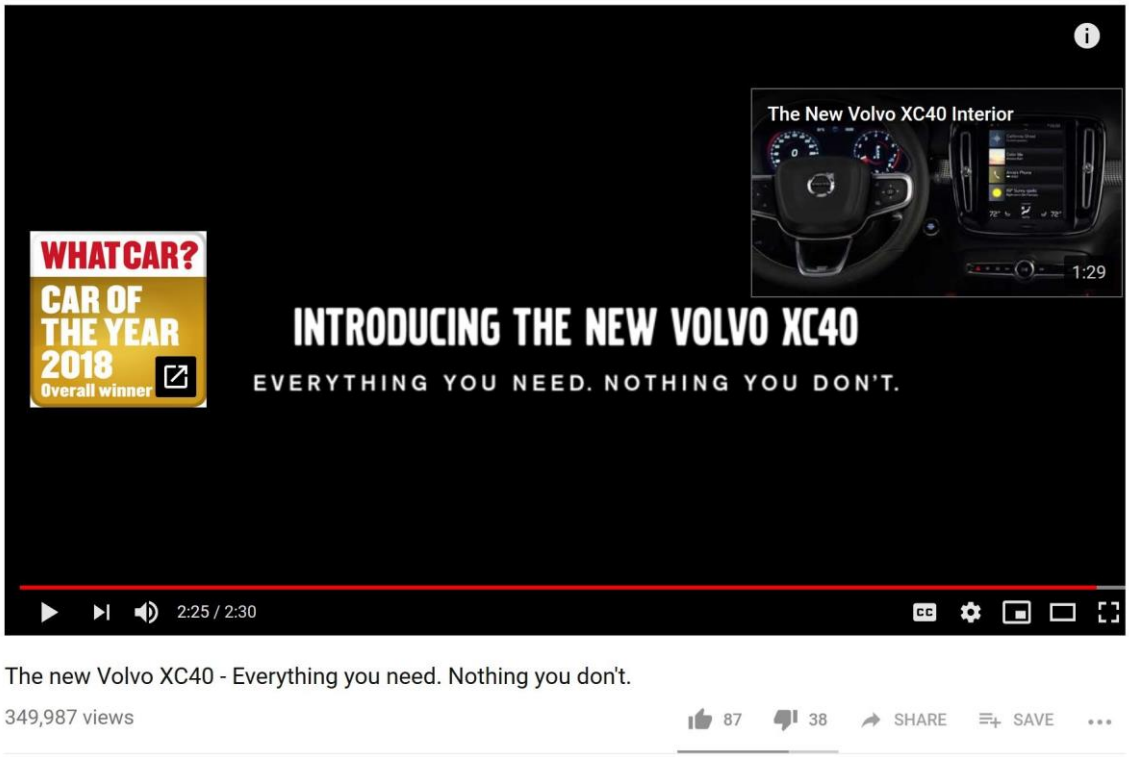
Source: https://www.msn.com/en-gb/cars/fcom/everything-you-need-nothing-you-don%27t/ar-AAw5TGJ

In the voice-over of the advertisement, Volvo further elaborates on the idea that unnecessary extras are not needed by consumers, with the following statements:

"There was a time when everything was everything. Times are changing. Introducing the new Volvo CX40. Everything you need. Nothing you don't."[19]

[19] Video source: https://www.youtube.com/watch?v=zIoc8cgytcs , accessed December 2018.

Figure 19. Visual from video advertisement, everything you need, nothing you don't



The advertisement has been watched 349,987 times on Youtube, just one of the channels of promotion. This slogan and strategy of the Swedish carmaker offers additional evidence that the idea that consumers like to pay only for things they will use is gaining momentum in marketing. The model has already won 'Car of the year' award in 2018 and the attention it got is additional affidavit of the interest of consumers to avoid unneeded features and service.

Further contributions

Firstly, we discuss contributions from our theory of the repellent effect of waste. Secondly, we discuss the contributions from our established effect of a new type of extrinsic product cue – namely qualitative cost information – on the willingness to pay a premium.

In many industries, marketers offer features that build additional value of the product or service being offered, and at the same time strive to capture that value back by increasing prices. Sweeteners, bonus packs, 2-in-1 deals and similar marketing techniques have become commonplace. However, our theory of the repellent effect of waste serves to show that there could be such a thing as too much value, bordering on waste, in a product being offered, which eventually could put customers off rather than entice them into buying the product.

While we are not suggesting that deal sweeteners should be abolished altogether, we are calling for a balanced approach to sweetening so as not to make the cookies bitter from too much sugar. Marketers should therefore consider that bonuses should be relevant to the core value delivered to the target customers, and that consumers can really utilize and take advantage of that value. Only then will consumers respond positively to value with the decision to buy.

An important implication from wasteful bonuses is that they needlessly eat into the profitability of the firm. As evident from our experiment, less value could be sold at the same price, provided that it meets the needs of consumers. Wasteful value has a repellent effect and drives consumers away, and at the same time could unnecessarily reduce the profit.

Building further on the idea of the repellent effect of waste, we also look at the implications from our research for the design of offerings which are fully used by

consumers. We demonstrated that consumers are driven away from a purchase decision because they perceive there is unutilized value for them. Then logically, they should be driven *towards* an offering if it is demonstrably fully usable. This seems to be the underlying motivation behind the 'everything you need, nothing you don't' campaign by Volvo for XC40 described earlier. If we focus on services marketing, demonstrating to existing customers that they fully utilize their subscription package, for phone calling, for internet quota, or for visits to the gym, could entice consumers to stay with the service provider, or attract them as a new customer. Demonstrating full utilization and lack of waste in an offering could be a way to reduce consumer churn.[20] This is an avenue to be explored by further research and would contribute to complement the findings by Ascarza et al. (2016) discussed earlier about customers churning when offered better pricing plans.

Once the value in a product and price offering has been well engineered and waste has been ruled out, there is a need to justify this price and convince consumers to buy your product. That is where our second important practical contribution comes: by displaying qualitative cost information together with the price, marketers and firms can effectively improve consumer's willingness to pay a price premium. Cost transparency is practically non-existent in marketing practices. While numerical cost disclosure may seem too difficult in many industries, as those with large fixed costs and hard-to-estimate single product costs, the qualitative information about different cost elements would be readily identifiable in most firms and most industries. Displaying that qualitative cost information to consumers can make a difference to the market success of a product.

[20] 'Churn' refers to customers who cease to use the services or products of a company. Online businesses, telecommunications, banking and finance companies and insurers typically measure and try to reduce customer churn, as it is cheaper to service retained customers than to attract new ones.

Although at present it may seem exotic to propose disclosure of qualitative cost information to consumers in order to justify a price premium, there are a growing number of instances where this is already happening in marketing practice. We have seen this occur in communicating the raw inputs used for the product to customers, in particular to justify why the product is premium and is priced higher than substitutes. In appendix IV, we provide sample of such display of qualitative cost information in various consumer products. Although still very rare in practice, we believe such disclosure of qualitative information will grow in the future. In our research, we explore further the questions does this really work in justifying a premium, and what would consumers do if they have to choose between products that do and do not display additional qualitative cost information as a cue together with the price. Therefore, the practical implications of our research would be into whether such practices could help or hinder the improvements to WTP price premiums and help marketers decide on what cue to share with consumers.

CHAPTER 5: DISCUSSION OF FINDINGS

The results of our large-scale field experiment seem quite controversial at first: remove features, offer the product at the same price, and sell a lot more. From pure utility theory perspective, normative scientific research poses that the relationship between value and utility on one side, and price and WTP on the other, correlate uni-directionally. Probability theory, utility theory, statistics, formal logic and formal decision theory are based on this unbreakable axiom (Koehler and Harvey, 2008).

In economic research, welfare, utility, or reservation prices are all numerical measures which relate to any independent variable chosen in the study in a linear relationship. The classic Demand function is upward sloping: for one level of price, there is only one level of quantity consumed, there is no convexity or concavity of the demand function which would allow for two possible consumption levels at the same price, which is what we observed in our experiment. If the product price is below the consumer's reservation price, economics theory considers it will be sold. A seminal work on the pricing of bundles demonstrates how profitability "can stem from the ability to sort customers into groups with different reservation prices" (Adams and Yellen, 1976) and is based on exactly such uni-directional relationships between the price level and reservation price of customers. In our experiment, we can see that the same reservation price (i.e. the price at which customers decide they will buy the product) can intersect demand at two different levels of consumption for a product serving the same customer need for fixed telephony.

Pricing research in marketing has used reservation prices of customers as an absolute numeric value in designing profit optimization pricing strategy (Jiang et al., 2011). Utility-maximizing is the most common modeling method for consumer-

behavior-based design of pricing strategy, with several extensions being presented in research, such as estimating costs of bundling and price differentiation, uncertainty and learning (see Lambrecht et al. 2012 for a good overview). The ICQ model (purchase incidence (I), brand choice (C), and quantity (Q) = ICQ) is also heavily reliant on utility function maximization and often used in modeling marketing metrics (Zhang and Krishnamutari, 2004; Niraj et al., 2001).

From the point of view of strictly normative discourse, it is tempting to say what we observed in our experiment seems irrational. Normative research takes utility, or 'good' as a thing that can be measured and compared (Baron, 2004). Comparing those measures in number values is then a mathematical operation and can have only one correct outcome. In the case of our pricing experiment, if buying minutes of phone calls separately one by one costs you X amount, but buying them in a bundle together costs you less than X/2, the decision to buy is straight forward.

However, psychology and in particular judgment and decision making (JDM) has long recognized that "descriptive behavior falls systematically short of normative ideals" (Larrick, 2004, p. 316). Several theories to explain this have been developed: biases and 'debiasing' of the mind (Larrick, 2004), multi-attribute utility theory (Tversky, 1967; Adams and Fagot, 1959), decision analysis models (Raiffa, 1968), frame of reference effects (LeBeouf and Shafir, 2003). There are "systematic fluctuations in attribute value and weights" (Shafir and LeBoeuf, 2004, p. 343). Cognitive and emotional processes can alter the mapping of the attribute value into psychological value, and the two can be very different. Contextual "nuances may alter the perception of values" (Shafir and LeBoeuf, 2004, p. 343). Game-theory price calculation and optimization models have been developed in pricing for the auto industry (Sudhir, 2001; Sudhir et al., 2005). So, it is not irrationality that can explain

what we observed in our experiment; rather, psychological value reflects perception nuances and yields different utility from the pure normative price-value evaluation.

Marketing has a tradition of integrating consumer psychology in the study of how to design prices (Thomas and Morwitz, 2009). The study of different heuristics on the judgement that consumers make in purchasing a product, on the magnitude of prices or numerical differences of prices, has been explored, with some interesting experimental findings, for example how the digits are arranged in an advertised price (Thomas & Morwitz, 2009).

Waste aversion as an idea has been shown to affect spending intentions in psychology lab experiments for physical goods in a study by Lisa Bolton and Joseph Alba (Bolton and Alba, 2012). Through a series of laboratory experiments, the authors demonstrate that "consumers exhibit aversion to waste" and that this behavior is "driven by distaste for unused utility", distinctly different from "an aversion to squandering money" (Bolton and Alba, 2012, p. 369). In particular, the authors further find that "for a service, re-purchase did not affect waste ratings" (p.374) and that goods providers are more vulnerable to waste aversion by customers. The authors claim service providers can "charge a price commensurate with an offering's utility because of the inherent nature of a service makes it less likely to contain unused utility" (p.381). With our three propositions, we have enriched and expanded the findings of the authors, by demonstrating the repellent effect of waste in service, and proposing the first moderating factor: income.

Because of the proposed gap by Bolton and Alba's research between service and good providers being evaluated by customers for waste, further work on this idea has focused on rent-versus-buy decisions (Tully et al., 2013) or on goods waste

avoidance. Philip et al. (2015) examine the effect in peer-to-peer renting, Cruz-Cárdenas et al. (2016) study clothing disposition by gifting, and several researchers look into food waste (Lin and Chang, 2017; Graham-Rowe et al., 2014; Stancu et al., 2016). In our research, we proposed and tested a theory of repellent effect of waste *especially* for services, and for perishable goods, thus expanding the theoretical knowledge so far.

The implications from REW

The desire not to appear wasteful has been explored in an interesting psychological study by Hal Arkes in 1996. In three separate experiments, the author finds that the goal of utility maximization may be "compromised by the consideration of another goal… in order to avoid the appearance of wastefulness" (Arkes, 1996, p. 214). In one of the experiments, at an identical price, people are more likely to trade in a product and upgrade rather than buy it completely new. Our experiment builds a theory of the repellent effect of waste in services, and thus enriches existing waste avoidance theory.

Related and growing amount of research into sustainability examines how consumers themselves need to play an important part in preserving holistic environmental, personal and economic equilibrium. There have been several studies promoting the notion of sustainable consumption (Shaefer and Crane, 2005; Prothero et al., 2010; Varey, 2010). The call for 'mindful consumption' which "translates into tempering the self-defeating excesses associated with acquisitive, repetitive and aspirational consumption" also illustrates how marketers can undergo a change of orientation towards sustainability (Sheth et al., 2011, p. 21). Just like in our theory, an effectively higher (or unchanged) price to pay is not affecting the decision to consume less; mindful consumption advocates note that "emphasis in marketing

should not be on ‘cheap’ but on quality and value” (Sheth et al., 2011, p. 33). Avoidance of waste when buying products and services which we theorize is a milestone building block of economic, personal and environmental equilibrium.

Avoidance of waste in owned resources has also led to a boom of sharing services, the so-called ‘sharing economy’. There is a shift from manufacturing tangible output into providing services based on underutilized assets which is transforming whole strands of economic activity in a surprising manner. Uber, AirBnB, Mobile Virtual Network Operators and Adobe Creative Cloud are examples of such services. New service-based businesses are thriving by utilizing spare or wasted capacities, because consumers have a natural inclination to avoid waste.

FUTURE RESEARCH

Further research into the repellent effect of waste theory could include but are not limited to the following areas:

Implications for keeping consumers by demonstrating full utilization

If the repellent effect of waste we demonstrated drives consumers away from a purchase decision, then by demonstrating full use of the value in an offering could serve to entice consumers to buy a service or stay with a service provider. Some internet providers have developed tools for customers to monitor their usage (both in minutes of talk time and in megabytes of uploads and downloads). Further research could look into whether the opposite of the repellent effect holds true: if consumers can clearly see and track that they fully utilize a service, would they be more likely to stay with the service, choose more services from the same provider, and less likely to churn.

Numerical estimation of changes in the monetary value of WTP

If WTP a premium is increased by up to 36% by displaying qualitative cost cues together with the price in our research, how much does that translate to in numeric terms for the price premium consumers are willing to pay? In this research, we kept the price differential the same across product categories and across survey groups, in order to first determine the main effect. The next logical step would be to test the sensitivity of the increased WTP a premium with specific numeric price values and establish a range or boundaries of that price premium. This would have implications for price design and premium sensitivity for the theory and practice of pricing.

CHAPTER 6: CONCLUSION

Based on consumer psychology theories, our six experiments and decision-making literature, we proposed and tested a new theory of the repellent effect of waste in marketing products and services. We also proposed the first moderating factor (income) for the repellent effect of waste observed in consumer choice. Lastly, we proposed and tested the proposition that qualitative costing cues can increase the Willingness to Pay a price premium.

Our experimental results show that there is an ethical, cheap and effective way to communicate a price premium to consumers and convince them to buy your premium product: explain about your costs qualitatively and show them to consumers. That will help to justify your premium and could convince 36% of potential consumers to switch to your premium product.

Our experiments further showed that less is not always more. In many industries, marketers offer features that build additional value of the product or service being offered, and at the same time strive to capture that value back by increasing prices. Sweeteners, bonus packs, 2-in-1 deals and similar marketing techniques have become commonplace. However, our experiment shows there could be such a thing as too much value, bordering on waste, in an offering, which eventually could put customers off, rather than entice them into buying the product.

While we are not suggesting that deal sweeteners should be abolished altogether, we are calling for a balanced approach to sweetening so as not to make the cookies bitter from too much sugar. Marketers should therefore consider that bonuses should be relevant to the core value delivered to the target customers, and

that consumers can really utilize and take advantage of that value. Only then will consumers respond positively to value with the decision to buy.

An important implication from wasteful bonuses is that they needlessly eat into the profitability of the firm. As evident from our experiment, less value could be sold at the same price, provided that it meets the needs of consumers. Wasteful value has a repellent effect, it drives consumers away, and at the same time could unnecessarily reduce the profit.

We propose that marketers could end up with products and services which are so ornate, se elaborate and dressy with features that they actually end up driving customers away. We propose that value-in-use is more important than value-in-absolute. We propose that waste in a product or a service has an unwanted, repellent effect, that too much sweetener makes the cookies bitter. This effect is more pronounced in lower income consumers compared to higher income brackets.

The repellent effect of waste is evident in consumers who do not mind paying a higher price per unit, but want to make sure they do use all of the offering. Buying a single dose of shampoo versus buying a large 3-litre bottle and having to throw it away; choosing a-la-carte menu over the similarly priced buffet deal because there is only so much of what you eat; the co-housing movement, the revival of handmade craft, urban cooperatives, the downsizing movement, the small houses movement: there are many evident trends and behaviors proving our waste-avoidance theory. The growth of the share economy, largely driven by websites such as AirBnB and Uber, is fundamentally about avoiding waste of underutilized assets, and creating a service economy out of spare physical assets. This increasingly dominant role of the service economy has been studied by many researchers, as it is characterized by a focus on the customers and produces an intangible product (Fuchs, 1968; Heskett,

1995). There is a significant trend of sustainable, efficient consumers. They are not necessarily looking to save money, nor are they poor or frugal but they do want to avoid waste. They are looking for true value-in-use and efficiency. If marketers respond to that by designing balanced and efficient offerings, there is a lot of profitability improvement potential and consumer welfare improvement that can be achieved simultaneously. In the end, the search for efficiency is the ultimate driving force of human progress.

APPENDIX I. Survey for study 2

Protocol No. 506/2016 approved by ANU Human Ethics Committee

Please, answer the 3 questions:

* Required

1. **You are going on a trip for 2 days. Which one would you buy?** *
   Mark only one oval.
   - ◯ Option 1
   - ◯ Option 2

Untitled Section

2. **You are staying in a house for 2 days. Which one would you buy?** *
   Mark only one oval.
   - ◯ Option 1
   - ◯ Option 2

3. **I would say my income is:** *
Mark only one oval.

- ◯ Below the average
- ◯ About average
- ◯ Above the average

APPENDIX II. Survey for study 3

Protocol No. 506/2016 approved by ANU Human Ethics Committee

Question 1:

You are going on a trip alone for 2 days. Which one would you buy?

- Option 1
- Option 2

Image title

Question 2:

You are staying in house by yourself for 2 days. Which one would you buy?

- Option 1
- Option 2

Question 3

I would say my income is:

- Below the average
- About average
- Above the average

APPENDIX III: Survey for study 4

Protocol No. 506/2016 approved by ANU Human Ethics Committee

Price and Cost elements – SURVEY A

Q1. Welcome to the Pricing Survey. My name is Katerina Kormusheva and I am a PhD Candidate at the Australian National University. I am carrying out this survey to further the findings of my doctoral studies. I appreciate if you could answer the 5 questions as honestly as you can. Thank you! For more information, please see the full information sheet, or feel free to contact me at katerina.kormusheva@anu.edu.au.

Q2 Which one would you buy?

- COFFEE $4.55 (1)
- COFFEE $3.50 (2)

Q3 Which one would you buy?

- AIRLINE TICKET Sydney-Tokyo $455 (1)
- AIRLINE TICKET Sydney-Tokyo $350 (2)

Q4 Which one would you buy?

SANDWICH $9.00 (1)

SANDWICH $7.00 (2)

<u>Price and Cost elements – SURVEY B</u>

Q2 Which one would you buy?

COFFEE $4.55 We buy the coffee beans from certified sustainable farms. We pay growers fair prices. We source our sugar from Australian mills in Queensland. We pay our staff all employee benefits and insurance (1)

COFFEE $3.50 (2)

Q3 Which one would you buy?

AIRLINE TICKET Sydney-Tokyo $455 We train our pilots for more than 10,000 fly hours before they are allowed to operate a flight. We have our own dedicated technical teams in hub airports. Our planes undergo 120 different tests before they are declared fit to fly. (1)

AIRLINE TICKET Sydney-Tokyo $350 (2)

Q4 Which one would you buy?

SANDWICH $9.00 Our flour is sourced from Australian mills and complies with H&S regulations. Our beef comes from the butchery in Gundaroo, NSW. Our cheese is sourced from the Australian producer Bega. (1)

SANDWICH $7.00 (2)

Common questions - SURVEY A and B

Q5 Would you say your income is:

- below your peers' average (1)
- average as your peers (2)
- above your peers' average (3)

Q6 What is your gender?

- Male (1)
- Female (2)

Appendix IV: Qualitative cost cues examples

Practical examples of disclosing qualitative cost information for a product in order to justify a price premium:

1. Magnum ice cream: "Cocoa components from rainforest alliance certified

2. Danone yoghurt: "100% Australian farmed milk"

3. Sheets of Egyptian cotton: enclosed the whole certificate in Arabic, with English translations, allowing the export of cotton bales from Egypt:

ARAB REPUBLIC OF EGYPT
ALEXANDRIA CHAMBER OF COMMERCE

جمهورية مصر العربية
الغرفة التجارية المصرية بالإسكندرية

34802 Origin Certificate شهادة مصدر

Certificate No.: 246 رقم الشهادة :
Receipt No.: 2555-2554 رقم إيصال السداد :

Alexandria Chamber of Commerce Certify that the goods mentioned hereinafter are of the origin of Arab Republic of Egypt according to the documents presented by ahmed elsharnouby mohamed ayaad trade and cotton ginning , import and export , for a/c paul reinhart ag.

تشهد الغرفة التجارية المصرية بالإسكندرية بأن البضاعة الموضحة فيما يلى مصدرها جمهورية مصر العربية طبقاً للمستندات التى قدمها إلينا

These goods are sent from dekheila - egypt وهذه البضاعة مرسلة من
To qingdao - china إلى
To be consigned to shandong hongcheng hometex co., ltd no.8 huangshan 3 road zouping, shandong province, china المسلمها إلى
On the Vessel ever utile على الباخرة
Belonging to evergreen line التابعة لشركة
B / L No. eglv598400100447 dated 29/ 12/2014 بوليصة الشحن رقم بتاريخ ٢٠ / /

القيمة الإجمالية Total amount	الوزن Weight	عدد الطرود ونوعيتها Number and Categorics Of the parcels	العلامات والأرقام Marks and Numbers	صنف البضاعة Species of the goods
	105559 kgs	450 bales of egyptian raw cotton	lot; 114 - 115 - 116 - 117 - 118	egyptian raw cotton giza 86 - crop 14/15 reinhart/s027.665

COPY

I declare that indications mentioned above are ture and under my responsibility
Exporter Signature
Ahmed El Sharnouby Mohamed Ayaad
Trade and Cotton Ginning
Import and Export

أقر بأن البيانات الموضحة بعاليه صحيحة وتحت مسئوليتى
توقيع المصدر

Alexandria, in 8.1.2015 الإسكندرية فى :
Alexandria Chamber of Commerce الغرفة التجارية المصرية لمحافظة الإسكندرية
First Signature إمضاء أول
Second Signature إمضاء ثان

Appendix V: Ethics approval for research studies carried out by author

1. Ethics approval for Experiment 1

Human Ethics Protocol 2016/204

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR E-MAIL CONTACT DETAILS.

Dear Ms Katerina Kormusheva,

Protocol: 2016/204
Investigate price and quantity effect on decision to buy a product

I am pleased to advise you that your Human Ethics application received approval by the Chair on 9/5/2016 .

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.

2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.

3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.

4. Please advise the HREC if you receive any complaints about the research work.

5. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

All the best with your research,

Human Ethics Officer
Research Integrity & Compliance
Research Services Division
Level 2, Birch Building 36
Science Road, ANU
The Australian National University
Acton ACT 2601

T: 6125-3427
E: human.ethics.officer@anu.edu.au
W: https://services.anu.edu.au/research-support/ethics-integrity

Ethics & integrity - Staff Services - ANU

services.anu.edu.au

Human resources. Help you with all aspects of your employment including conditions, pay and other benefits, training, and wellbeing.

2. Ethics approval for Experiment 2

Human Ethics Protocol 2017/186 - Approval

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR E-MAIL CONTACT DETAILS.

Dear Ms Katerina Kormusheva,

Protocol: 2017/186
Consumer willingness to pay same price for less quantity, for perishable products

I am pleased to advise you that your Human Ethics application received approval by the Chair on the 05/04/2017.

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.

2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.

3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.

4. Please advise the HREC if you receive any complaints about the research work.

5. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

All the best with your research,

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Research Integrity & Compliance

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Ethics & integrity - Staff Services - ANU

services.anu.edu.au

Human resources. Help you with all aspects of your employment including conditions, pay and other benefits, training, and wellbeing.

3. Ethics approval for Experiment 3 and 4

Human Ethics Protocol 2016/506 - Approval

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR E-MAIL CONTACT DETAILS.

Dear Ms Katerina Kormusheva,

Protocol: 2016/506
Price and cost information links

I am pleased to advise you that your Human Ethics application received approval by the Chair on the 09/09/2016.

The documentation has been well prepared.There are a few grammatical errors - please proof read carefully before distributing. The protocol is approved.

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.

2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.

3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.

4. Please advise the HREC if you receive any complaints about the research work.

5. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

All the best with your research,

Human Ethics Officer
Research Integrity & Compliance
Research Services Division
Level 2, Birch Building 36
Science Road, ANU
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Acton ACT 2601

T: 6125-3427
E: human.ethics.officer@anu.edu.au
W: https://services.anu.edu.au/research-support/ethics-integrity

Ethics & integrity - Staff Services - ANU

services.anu.edu.au

Human resources. Help you with all aspects of your employment including conditions, pay and other benefits, training, and wellbeing.

4. Ethics approval for Experiment 5 and 6

Human Ethics Protocol 2017/185 - Approval

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR E-MAIL CONTACT DETAILS.

Dear Ms Katerina Kormusheva,

Protocol: 2017/185
Analysis of optimized pricing offers for telephone services

I am pleased to advise you that your Human Ethics application received approval by the Chair of the Humanities & Social Sciences DERC on the 05/12/2017.

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.

2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.

3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.

4. Please advise the HREC if you receive any complaints about the research work.

5. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

All the best with your research,

Human Ethics Officer
Research Integrity & Compliance

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Acton ACT 2601

T: 6125-6782
T: 6125-3427
E: human.ethics.officer@anu.edu.au
W: https://services.anu.edu.au/research-support/ethics-integrity

5. Ethics & integrity - Staff Services - ANU
6. services.anu.edu.au
7. Human resources. Help you with all aspects of your employment including conditions, pay and other benefits, training, and wellbeing.

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